

ACIDIC PRECIPITATION  
IN ONTARIO STUDY  
  
ANNUAL STATISTICS  
OF CONCENTRATION:  
CUMULATIVE AMBIENT  
AIR MONITORING NETWORK  
1988

JULY 1990



Environment  
Environnement

Jim Bradley, Minister/ministre

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ANNUAL STATISTICS OF CONCENTRATION:

CUMULATIVE AMBIENT AIR MONITORING NETWORK

1988

Report prepared by:  
Atmospheric Research and Special Projects Section  
Air Resources Branch  
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This report was prepared by Diane Green of the APIOS Atmospheric Deposition and Chemistry Program. However, the data themselves are a product of the combined efforts of many individuals. Precipitation samples were collected by a large number of site operators, whose names cannot be individually mentioned here, under the coordination of the APIOS environmental technicians Scott Kennedy (in the Southwestern Region), Steve Elliott (in Southeastern Region), Wim Smits (in Northwestern Region), Bill Trayling (Northeastern Region), and J.P. Varto (in Central Region). Sample handling was carried out by Sue Lampinen and Gail Fielding. Chemical analyses were performed at the Laboratory Services Branch under the coordination of Frank Tomassini. Invaluable clerical and computer assistance were provided by Peter Maheras, Joseph Lamb and Roberto Banchon. All enquiries regarding the reported data should be directed to Neville Reid, Coordinator, Atmospheric Deposition and Chemistry Program, at (416) 326-1691.

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| <u>Station</u>  | <u>Map Ref. No.</u> |    |
|-----------------|---------------------|----|
| Campbellford    | 13                  | 1  |
| Cloyne          | 14                  | 2  |
| Colchester      | 1                   | 3  |
| Dalhousie Mills | 16                  | 4  |
| Dorion          | 31                  | 5  |
| Dorset          | 20                  | 6  |
| Ear Falls       | 35                  | 7  |
| Geraldton       | 30                  | 8  |
| Golden Lake     | 17                  | 9  |
| Gowganda        | 25                  | 10 |
| Killarney       | 23                  | 11 |
| Mattawa         | 22                  | 12 |
| McKellar        | 21                  | 13 |
| Moonbeam        | 27                  | 14 |
| Moosonee        | 38                  | 15 |
| Palmerston      | 8                   | 16 |
| Pickle Lake     | 36                  | 17 |
| Port Stanley    | 3                   | 18 |
| Quetico Centre  | 32                  | 19 |
| Shallow Lake    | 9                   | 20 |
| Smith's Falls   | 15                  | 21 |
| Turkey Lake     | 37                  | 22 |
| Uxbridge        | 11                  | 23 |
| Wilkesport      | 4                   | 24 |

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|---------------------|----|
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PART I

INTRODUCTION



### INTRODUCTION

This report was prepared by Diane Green. The statistical summaries presented in this report pertain to the 1988 analytical results obtained from the Acidic Precipitation in Ontario Study (APIOS) cumulative ambient air monitoring network. The relevant data can be obtained on request from the Air Resources Branch of the Ontario Ministry of the Environment. Any sample of which sampling period is less than 23 days or greater than 33 days is not included in the statistics calculations. All available data are utilized in the calculations except results reported as being unreliable (i.e., results are identified as unreasonable values by using the validation procedures; detailed description of the validation procedure is available from the Ministry upon request) or approximate (i.e., inexact results are reported due to laboratory difficulties, such as may be encountered in calibration or when the samples cannot be analyzed to confirm the reported values). In a very few cases, concentration levels exceeded the upper limit of the range of the chemical analysis. Rather than using the upper limit, a decision was made to exclude these values from the statistics generated in this report. Results labelled as <W are replaced by "zero". W is the level which the analytical technique cannot distinguish from zero. Prior to 1986, a level was recorded less than one detection limit T, a value corresponding to one half the detection limit was utilized for statistical calculations as reported in the statistical summaries. These values are no longer halved. Note that T is normally about ten times W, and values above the T criteria are considered to be precise and accurate. W corresponds to approximately one standard deviation of low level duplicate of real samples. In the presented statistics summaries, "Total Sulphur" is calculated by the summation of sulphur of Sulphur Dioxide" and "Sulphate".

Beginning in 1985, "Sulphur Dioxide" is corrected by the addition of nylon filter sulfate. In these reports sulphur loading on nylon filters is interpreted as sulphur dioxide. However, it is possible that organic sulphur compounds also contribute to this loading. Methods do not currently exist to quantify this contribution in routine network operation.

The statistical summaries presented in Parts III to IV include number of samples, mean (arithmetic/geometric), standard deviation (arithmetic/geometric), maximum, minimum, quartiles. These statistics are for an average sampling period.

#### Whatman 40 Blank Filters

The occurrence of non-zero blank values for the Whatman 40 filters used in the cumulative network should be borne in mind when interpreting data from this method. Typical loadings (mg/filter) for these blank filters, are summarized in Table 1.

Table 1

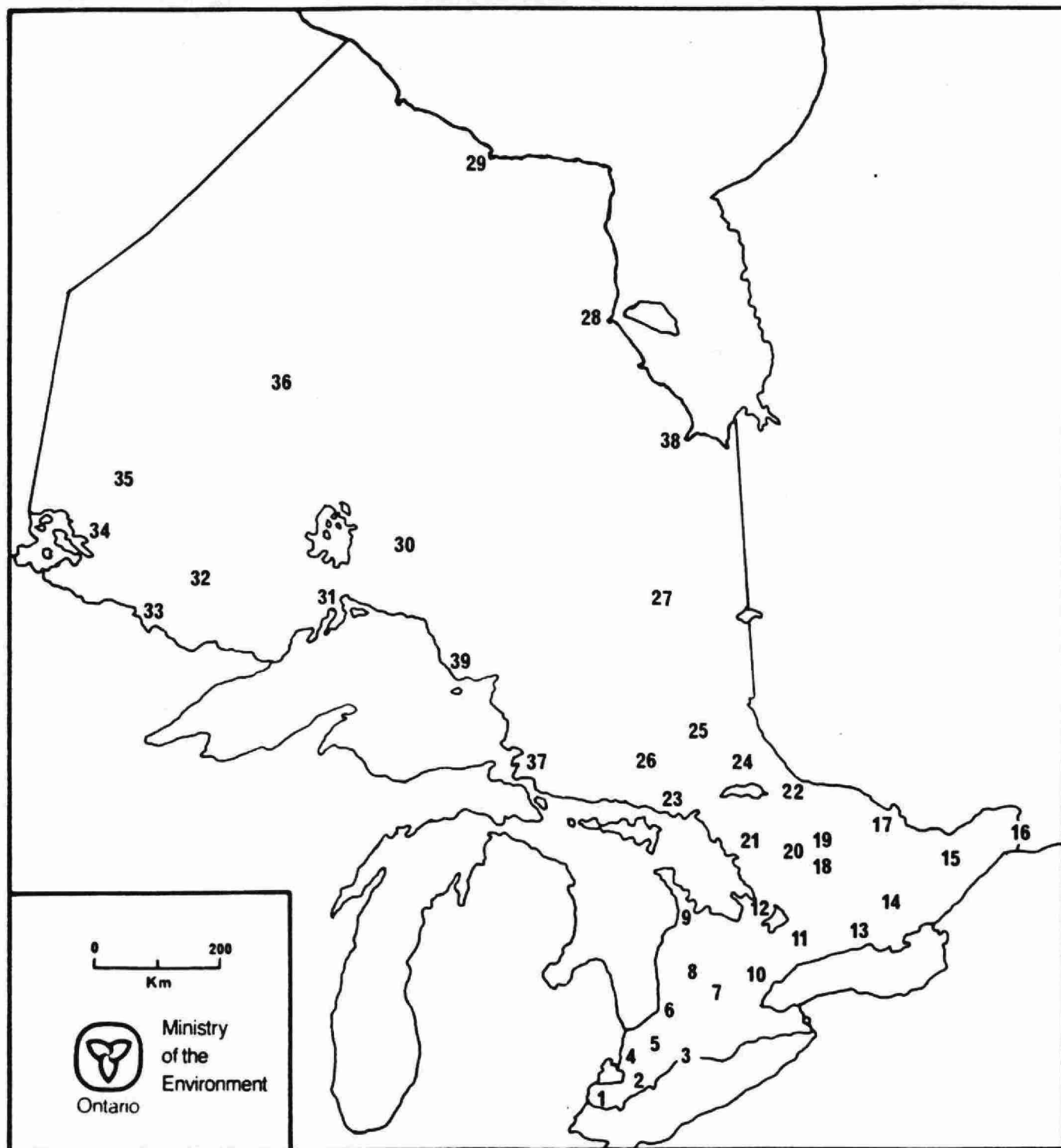
| Chemical<br>of Filters<br>Parameters | Total<br>Samples | Blank Loading ( $\mu\text{g}/\text{filter}$ ) |       | Number<br>$\geq W$ |
|--------------------------------------|------------------|-----------------------------------------------|-------|--------------------|
|                                      |                  | Mean*                                         | S.D.* |                    |
| Sulphate                             | 107              | 5.0 <T                                        | 0     | 22                 |
| Nitrate                              | 107              | 1.4 <T                                        | 0.3   | 25                 |
| Calcium                              | 96               | 2.88                                          | 0.68  | 96                 |
| Magnesium                            | 97               | 0.69                                          | 1.33  | 65                 |
| Aluminum                             | 97               | 0.59                                          | 0.56  | 45                 |
| Cadmium                              | 97               | 0.010                                         | 0.006 | 91                 |
| Copper                               | 97               | 0.03                                          | 0.02  | 70                 |
| Iron                                 | 97               | 0.92                                          | 0.70  | 95                 |
| Manganese                            | 97               | 0.20                                          | 0.51  | 35                 |
| Nickel                               | 97               | 0.04                                          | 0.07  | 54                 |
| Lead                                 | 97               | 0.12                                          | 0.13  | 38                 |
| Vanadium                             | 97               | 0.02                                          | 0.002 | 36                 |
| Zinc                                 | 97               | 0.23                                          | 0.13  | 39                 |
| Sodium                               | 107              | 2.66                                          | 0.95  | 106                |
| Potassium                            | 103              | 1.16                                          | 1.50  | 103                |
| Chloride                             | 107              | 8.8                                           | 2.8   | 105                |

\*Calculated for  $\geq W$  values only.

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PART II

STATION DESCRIPTION AND LOCATION MAP



- |                                        |                                         |                                           |
|----------------------------------------|-----------------------------------------|-------------------------------------------|
| 1. Colchester*                         | 15. Smith's Falls*                      | 29. Winisk (rem. Dec '86)                 |
| 2. Merlin                              | 16. Dalhousie Mills*                    | 30. Geraldton (replaced Nakina, Aug '83)  |
| 3. Pt. Stanley*                        | 17. Golden Lake*                        | 31. Dorion*                               |
| 4. Wilkesport*                         | 18. Wilberforce                         | 32. Quetico Centre*                       |
| 5. Alvinston                           | 19. Whitney                             | 33. Lac la Croix                          |
| 6. Huron Park                          | 20. Dorset*                             | 34. Experimental Lakes Area               |
| 7. Waterloo                            | 21. McKellar*                           | 35. Ear Falls*                            |
| 8. Palmerston*                         | 22. Mattawa*                            | 36. Pickle Lake*                          |
| 9. Shallow Lake*                       | 23. Killarney*                          | 37. Turkey Lake*                          |
| 10. Milton (removed March '84)         | 24. Bear Island                         | 38. Moosonee* (installed October '85)     |
| 11. Uxbridge*                          | 25. Gowganda*                           | 39. Otter Island* (summer only)           |
| 12. Coldwater                          | 26. Azure Lake (repl. Ramsey, June '83) | 40. Sutton, Quebec (Intercomparison Site) |
| 13. Campbellford*                      | 27. Moonbeam*                           |                                           |
| 14. Cloyne* (repl. Kalladar, June '83) | 28. Attawapiskat (rem. Feb '84)         |                                           |

\* indicates both a wet and dry deposition network site

**ONTARIO MINISTRY OF THE ENVIRONMENT  
APIOS-ACIDIC PRECIPITATION IN ONTARIO STUDY  
CUMULATIVE AMBIENT AIR SITES**

| STATION ID        | MOE REGION   | STATION NAME    | ELEV<br>(M) | LATITUDE<br>(NORTH) | LONGITUDE<br>(WEST) | UTM GRID<br>CO-ORDINATES |           |
|-------------------|--------------|-----------------|-------------|---------------------|---------------------|--------------------------|-----------|
|                   |              |                 |             |                     |                     | (NORTHING)               | (EASTING) |
| 000001-22-21-1041 | SOUTHWESTERN | COLCHESTER      | 183         | 41°59'15"           | 82°55'41"           | 4649973                  | 340284    |
| 000001-22-21-1061 | SOUTHWESTERN | PORT STANLEY    | 213         | 42°40'22"           | 81°09'55"           | 4724277                  | 486457    |
| 000001-22-21-1071 | SOUTHWESTERN | WILKESPORT      | 183         | 42°42'11"           | 82°21'13"           | 4728515                  | 389135    |
| 000001-22-21-1091 | SOUTHWESTERN | SHALLOW LAKE    | 229         | 44°34'54"           | 81°06'58"           | 4936270                  | 490782    |
| 000001-22-21-1101 | SOUTHWESTERN | PALMERSTON      | 389         | 43°48'19"           | 80°54'12"           | 4850035                  | 507776    |
| 000001-22-21-3011 | CENTRAL      | DORSET          | 320         | 45°13'26"           | 78°55'52"           | 5009656                  | 662429    |
| 000001-22-21-3061 | CENTRAL      | UXBRIDGE        | 244         | 44°12'46"           | 79°12'38"           | 4896847                  | 642958    |
| 000001-22-21-3081 | CENTRAL      | CAMPBELLFORD    | 175         | 44°17'28"           | 77°47'33"           | 4907783                  | 277202    |
| 000001-22-21-4061 | SOUTHEASTERN | SMITH'S FALLS   | 122         | 44°56'41"           | 75°57'48"           | 4977044                  | 423999    |
| 000001-22-21-4071 | SOUTHEASTERN | DALHOUSIE MILLS | 69          | 45°19'00"           | 74°28'13"           | 5018048                  | 541521    |
| 000001-22-21-4081 | SOUTHEASTERN | GOLDEN LAKE     | 160         | 45°36'48"           | 77°12'03"           | 5053226                  | 328397    |
| 000001-22-21-4091 | SOUTHEASTERN | CLOYNE          | 259         | 44°49'10"           | 77°11'07"           | 4964999                  | 327221    |
| 000001-22-21-5011 | NORTHEASTERN | MCKELLAR        | 244         | 45°31'15"           | 79°55'19"           | 5041158                  | 584196    |
| 000001-22-21-5021 | NORTHEASTERN | KILLARNEY       | 183         | 45°58'20"           | 81°29'18"           | 5090859                  | 462167    |
| 000001-22-21-5031 | NORTHEASTERN | MATTAWA         | 198         | 46°16'39"           | 78°49'19"           | 5126968                  | 667810    |
| 000001-22-21-5061 | NORTHEASTERN | GONGANDA        | 343         | 47°39'04"           | 80°46'32"           | 5277329                  | 516647    |
| 000001-22-21-5071 | NORTHEASTERN | MOONBEAM        | 244         | 49°19'40"           | 82°01'10"           | 5464175                  | 425924    |
| 000001-22-21-5141 | NORTHEASTERN | TURKEY LAKES    | 440         | 47°03'15"           | 84°24'20"           | 5214246                  | 697468    |
| 000001-22-21-5161 | NORTHEASTERN | MOOSONEE        | 8           | 51°12'35"           | 80°42'20"           | 5672970                  | 520568    |
| 000001-22-21-5201 | NORTHEASTERN | MCFARLANE LAKE  | 246         | 46°25'57"           | 81°57'03"           | 5142324                  | 426948    |
| 000001-22-21-6011 | NORTHWESTERN | DORION          | 244         | 48°50'33"           | 88°36'45"           | 5410982                  | 381684    |
| 000001-22-21-6031 | NORTHWESTERN | EAR FALLS       | 350         | 50°38'31"           | 93°13'13"           | 5609814                  | 484424    |
| 000001-22-21-6041 | NORTHWESTERN | PICKLE LAKE     | 360         | 51°02'41"           | 90°12'04"           | 5658308                  | 696198    |
| 000001-22-21-6071 | NORTHWESTERN | QUETICO CENTRE  | 420         | 48°24'44"           | 91°12'08"           | 5363461                  | 633036    |
| 000001-22-21-6111 | NORTHWESTERN | OTTER ISLAND    | 204         | 48°06'50"           | 86°04'25"           | 5329155                  | 568954    |
| 000001-22-21-6121 | NORTHWESTERN | GERALDTON       | 350         | 49°48'18"           | 86°45'52"           | 5516758                  | 516950    |

**PART III**

**SUMMARY STATISTICS OF OBSERVED CONCENTRATION BY STATION**

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=CAMPBELLFORD LOVEL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 9                    | 9                 | 9                  | 9                  | 9                    | 9                          | 9                             |
| MAXIMUM :         | 10.37                | 6.97              | 0.191              | 0.776              | 0.939                | 0.690                      | 0.122                         |
| MINIMUM :         | 2.36                 | 1.12              | 0.041              | 0.211              | 0.246                | 0.157                      | 0.015                         |
| ARITH. MEAN :     | 6.64                 | 3.18              | 0.103              | 0.574              | 0.466                | 0.435                      | 0.059                         |
| ARITH. STD. DEV : | 3.02                 | 1.68              | 0.052              | 0.175              | 0.216                | 0.189                      | 0.031                         |
| GEOM. MEAN :      | 5.90                 | 2.85              | 0.092              | 0.540              | 0.430                | 0.393                      | 0.052                         |
| 1ST QUARTILE :    | 3.40                 | 2.43              | 0.061              | 0.473              | 0.290                | 0.267                      | 0.041                         |
| 2ND QUARTILE :    | 7.58                 | 2.85              | 0.097              | 0.637              | 0.452                | 0.421                      | 0.057                         |
| 3RD QUARTILE :    | 8.98                 | 3.37              | 0.150              | 0.667              | 0.517                | 0.614                      | 0.072                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 9                    | 9                 | 9                  | 9                  | 9                    | 9                          | 9                             |
| MAXIMUM :         | 0.359                | 0.199             | 0.095              | 0.281              | 0.016                | 0.0131                     | 0.005                         |
| MINIMUM :         | 0.076                | 0.000             | 0.033              | 0.000              | 0.003                | 0.0029                     | 0.000                         |
| ARITH. MEAN :     | 0.198                | 0.087             | 0.060              | 0.108              | 0.008                | 0.0065                     | 0.003                         |
| ARITH. STD. DEV : | 0.106                | 0.062             | 0.019              | 0.115              | 0.004                | 0.0032                     | 0.002                         |
| GEOM. MEAN :      | 0.173                | 0.088             | 0.057              | 0.102              | 0.007                | 0.0060                     | 0.002                         |
| 1ST QUARTILE :    | 0.103                | 0.046             | 0.045              | 0.008              | 0.005                | 0.0048                     | 0.002                         |
| 2ND QUARTILE :    | 0.196                | 0.075             | 0.059              | 0.052              | 0.008                | 0.0053                     | 0.003                         |
| 3RD QUARTILE :    | 0.306                | 0.129             | 0.068              | 0.231              | 0.010                | 0.0086                     | 0.004                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 9                    | 9                 | 9                  | 9                  | 9                    | 9.00                       | 9.00                          |
| MAXIMUM :         | 0.00788              | 0.0026            | 0.0368             | 0.01416            | 1.6663               | 6.81                       | 0.97                          |
| MINIMUM :         | 0.00072              | 0.0000            | 0.0064             | 0.00039            | 0.4518               | 1.55                       | 0.25                          |
| ARITH. MEAN :     | 0.00239              | 0.0011            | 0.0207             | 0.00674            | 0.8724               | 4.38                       | 0.68                          |
| ARITH. STD. DEV : | 0.00232              | 0.0008            | 0.0095             | 0.00488            | 0.3937               | 1.82                       | 0.22                          |
| GEOM. MEAN :      | 0.00180              | 0.0011            | 0.0185             | 0.00403            | 0.8038               | 3.97                       | 0.64                          |
| 1ST QUARTILE :    | 0.00100              | 0.0004            | 0.0148             | 0.00139            | 0.5530               | 2.68                       | 0.54                          |
| 2ND QUARTILE :    | 0.00177              | 0.0011            | 0.0190             | 0.00744            | 0.8152               | 4.77                       | 0.72                          |
| 3RD QUARTILE :    | 0.00255              | 0.0016            | 0.0285             | 0.01040            | 1.0916               | 5.94                       | 0.81                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |



ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

STATION-CLOYNE LOVEL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 10.13                | 9.24              | 0.226              | 0.614              | 0.363                | 0.601                      | 3.418                         |
| MINIMUM :         | 1.24                 | 3.09              | 0.074              | 0.133              | 0.000                | 0.168                      | 0.044                         |
| ARITH. MEAN :     | 4.42                 | 5.33              | 0.127              | 0.318              | 0.211                | 0.344                      | 0.699                         |
| ARITH. STD. DEV : | 2.34                 | 2.28              | 0.045              | 0.158              | 0.109                | 0.146                      | 1.153                         |
| GEOM. MEAN :      | 3.90                 | 4.93              | 0.120              | 0.281              | 0.214                | 0.315                      | 0.237                         |
| 1ST QUARTILE :    | 2.70                 | 3.36              | 0.094              | 0.158              | 0.130                | 0.190                      | 0.093                         |
| 2ND QUARTILE :    | 4.56                 | 4.42              | 0.123              | 0.264              | 0.202                | 0.321                      | 0.112                         |
| 3RD QUARTILE :    | 4.99                 | 7.51              | 0.163              | 0.424              | 0.316                | 0.457                      | 1.128                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 2                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 0.639                | 0.171             | 0.092              | 0.233              | 0.011                | 0.0142                     | 0.009                         |
| MINIMUM :         | 0.100                | 0.037             | 0.033              | 0.000              | 0.000                | 0.0042                     | 0.001                         |
| ARITH. MEAN :     | 0.261                | 0.112             | 0.067              | 0.098              | 0.006                | 0.0074                     | 0.003                         |
| ARITH. STD. DEV : | 0.163                | 0.045             | 0.018              | 0.073              | 0.003                | 0.0028                     | 0.002                         |
| GEOM. MEAN :      | 0.220                | 0.102             | 0.065              | 0.089              | 0.006                | 0.0070                     | 0.002                         |
| 1ST QUARTILE :    | 0.112                | 0.074             | 0.054              | 0.046              | 0.003                | 0.0055                     | 0.002                         |
| 2ND QUARTILE :    | 0.252                | 0.120             | 0.073              | 0.063              | 0.006                | 0.0069                     | 0.002                         |
| 3RD QUARTILE :    | 0.364                | 0.157             | 0.082              | 0.164              | 0.009                | 0.0091                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11.00                      | 11.00                         |
| MAXIMUM :         | 0.00775              | 0.0028            | 0.0427             | 0.01147            | 2.2359               | 6.18                       | 0.71                          |
| MINIMUM :         | 0.00108              | 0.0005            | 0.0132             | 0.00335            | 0.6612               | 1.65                       | 0.23                          |
| ARITH. MEAN :     | 0.00272              | 0.0012            | 0.0209             | 0.00782            | 1.0565               | 3.99                       | 0.44                          |
| ARITH. STD. DEV : | 0.00200              | 0.0007            | 0.0082             | 0.00275            | 0.4556               | 1.12                       | 0.17                          |
| GEOM. MEAN :      | 0.00222              | 0.0010            | 0.0198             | 0.00732            | 0.9894               | 3.82                       | 0.42                          |
| 1ST QUARTILE :    | 0.00119              | 0.0006            | 0.0151             | 0.00517            | 0.7565               | 3.69                       | 0.32                          |
| 2ND QUARTILE :    | 0.00208              | 0.0011            | 0.0196             | 0.00814            | 0.8848               | 4.02                       | 0.36                          |
| 3RD QUARTILE :    | 0.00323              | 0.0016            | 0.0233             | 0.01037            | 1.1748               | 4.43                       | 0.63                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

STATION-COLCHESTER LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 16.38                | 11.71             | 0.421              | 1.473              | 5.849                | 1.038                      | 0.119                         |
| MINIMUM :         | 7.92                 | 0.34              | 0.030              | 0.232              | 0.063                | 0.440                      | 0.005                         |
| ARITH. MEAN :     | 11.68                | 5.16              | 0.171              | 0.997              | 2.111                | 0.676                      | 0.060                         |
| ARITH. STD. DEV : | 2.97                 | 3.36              | 0.102              | 0.372              | 1.917                | 0.165                      | 0.042                         |
| GEOM. MEAN :      | 11.34                | 3.70              | 0.141              | 0.896              | 0.996                | 0.659                      | 0.038                         |
| 1ST QUARTILE :    | 8.92                 | 3.39              | 0.099              | 0.853              | 0.283                | 0.561                      | 0.010                         |
| 2ND QUARTILE :    | 11.04                | 4.45              | 0.166              | 1.089              | 2.182                | 0.625                      | 0.072                         |
| 3RD QUARTILE :    | 14.84                | 7.96              | 0.217              | 1.196              | 3.312                | 0.781                      | 0.092                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.310                | 1.318             | 1.030              | 1.138              | 0.028                | 0.0311                     | 0.007                         |
| MINIMUM :         | 0.087                | 0.027             | 0.012              | 0.000              | 0.001                | 0.0006                     | 0.001                         |
| ARITH. MEAN :     | 0.168                | 0.349             | 0.262              | 0.364              | 0.016                | 0.0146                     | 0.004                         |
| ARITH. STD. DEV : | 0.066                | 0.353             | 0.274              | 0.376              | 0.011                | 0.0085                     | 0.002                         |
| GEOM. MEAN :      | 0.158                | 0.216             | 0.159              | 0.191              | 0.010                | 0.0103                     | 0.004                         |
| 1ST QUARTILE :    | 0.119                | 0.143             | 0.108              | 0.032              | 0.006                | 0.0085                     | 0.003                         |
| 2ND QUARTILE :    | 0.156                | 0.243             | 0.213              | 0.233              | 0.020                | 0.0154                     | 0.004                         |
| 3RD QUARTILE :    | 0.205                | 0.484             | 0.305              | 0.719              | 0.028                | 0.0199                     | 0.005                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 2                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00887              | 0.0075            | 0.0877             | 0.02045            | 1.5917               | 9.83                       | 1.62                          |
| MINIMUM :         | 0.00012              | 0.0002            | 0.0071             | 0.00077            | 0.1233               | 5.29                       | 0.42                          |
| ARITH. MEAN :     | 0.00324              | 0.0031            | 0.0536             | 0.00617            | 0.9411               | 7.56                       | 1.17                          |
| ARITH. STD. DEV : | 0.00255              | 0.0027            | 0.0209             | 0.00681            | 0.4410               | 1.51                       | 0.34                          |
| GEOM. MEAN :      | 0.00220              | 0.0021            | 0.0472             | 0.00332            | 0.8029               | 7.42                       | 1.11                          |
| 1ST QUARTILE :    | 0.00173              | 0.0014            | 0.0407             | 0.00096            | 0.6166               | 6.13                       | 0.94                          |
| 2ND QUARTILE :    | 0.00219              | 0.0018            | 0.0548             | 0.00239            | 0.9478               | 7.81                       | 1.24                          |
| 3RD QUARTILE :    | 0.00420              | 0.0063            | 0.0667             | 0.00972            | 1.3791               | 8.69                       | 1.35                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=DALHOUSIE MILLS LOVEL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 19.63                | 13.73             | 0.393              | 1.636              | 7.935                | 7.853                      | 3.599                         |
| MINIMUM :         | 2.30                 | 0.28              | 0.052              | 0.259              | 0.396                | 0.312                      | 0.084                         |
| ARITH. MEAN :     | 7.56                 | 5.17              | 0.134              | 0.677              | 1.725                | 1.383                      | 0.506                         |
| ARITH. STD. DEV : | 5.82                 | 3.65              | 0.109              | 0.418              | 2.241                | 2.306                      | 1.161                         |
| GEOM. MEAN :      | 5.87                 | 3.78              | 0.108              | 0.574              | 1.138                | 0.733                      | 0.166                         |
| 1ST QUARTILE :    | 3.12                 | 3.39              | 0.066              | 0.305              | 0.650                | 0.333                      | 0.088                         |
| 2ND QUARTILE :    | 5.65                 | 3.77              | 0.083              | 0.697              | 0.978                | 0.617                      | 0.099                         |
| 3RD QUARTILE :    | 11.11                | 6.72              | 0.189              | 0.871              | 1.723                | 1.120                      | 0.186                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 2                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 5.726                | 1.111             | 1.032              | 0.627              | 0.044                | 0.0656                     | 0.006                         |
| MINIMUM :         | 0.114                | 0.000             | 0.051              | 0.042              | 0.000                | 0.0114                     | 0.000                         |
| ARITH. MEAN :     | 1.174                | 0.245             | 0.252              | 0.256              | 0.012                | 0.0296                     | 0.004                         |
| ARITH. STD. DEV : | 1.907                | 0.318             | 0.286              | 0.191              | 0.012                | 0.0188                     | 0.002                         |
| GEOM. MEAN :      | 0.429                | 0.179             | 0.176              | 0.192              | 0.010                | 0.0244                     | 0.004                         |
| 1ST QUARTILE :    | 0.124                | 0.071             | 0.106              | 0.078              | 0.007                | 0.0117                     | 0.003                         |
| 2ND QUARTILE :    | 0.387                | 0.179             | 0.167              | 0.225              | 0.009                | 0.0278                     | 0.003                         |
| 3RD QUARTILE :    | 1.345                | 0.263             | 0.272              | 0.348              | 0.012                | 0.0467                     | 0.005                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11.00                      | 11.00                         |
| MAXIMUM :         | 0.02618              | 0.0071            | 0.0720             | 0.85079            | 13.7435              | 12.43                      | 2.03                          |
| MINIMUM :         | 0.00126              | 0.0000            | 0.0220             | 0.00060            | 0.0579               | 2.09                       | 0.34                          |
| ARITH. MEAN :     | 0.00462              | 0.0024            | 0.0376             | 0.09293            | 2.3341               | 5.50                       | 0.81                          |
| ARITH. STD. DEV : | 0.00772              | 0.0021            | 0.0171             | 0.26654            | 4.2142               | 3.36                       | 0.51                          |
| GEOM. MEAN :      | 0.00254              | 0.0020            | 0.0349             | 0.00818            | 0.8717               | 4.71                       | 0.69                          |
| 1ST QUARTILE :    | 0.00158              | 0.0007            | 0.0283             | 0.00371            | 0.5862               | 3.02                       | 0.39                          |
| 2ND QUARTILE :    | 0.00177              | 0.0018            | 0.0314             | 0.00508            | 0.6420               | 3.82                       | 0.77                          |
| 3RD QUARTILE :    | 0.00318              | 0.0036            | 0.0417             | 0.01751            | 1.9160               | 8.59                       | 1.00                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

STATION=DORION LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 1.71                 | 1.45              | 0.114              | 0.197              | 0.324                | 0.260                      | 0.050                         |
| MINIMUM :         | 0.00                 | 0.16              | 0.016              | 0.024              | 0.000                | 0.082                      | 0.000                         |
| ARITH. MEAN :     | 0.88                 | 0.98              | 0.038              | 0.081              | 0.077                | 0.146                      | 0.021                         |
| ARITH. STD. DEV : | 0.56                 | 0.46              | 0.028              | 0.052              | 0.091                | 0.055                      | 0.014                         |
| GEOM. MEAN :      | 0.81                 | 0.83              | 0.032              | 0.066              | 0.085                | 0.138                      | 0.020                         |
| 1ST QUARTILE :    | 0.39                 | 0.55              | 0.020              | 0.033              | 0.000                | 0.114                      | 0.012                         |
| 2ND QUARTILE :    | 0.75                 | 1.14              | 0.031              | 0.080              | 0.070                | 0.124                      | 0.018                         |
| 3RD QUARTILE :    | 1.43                 | 1.43              | 0.042              | 0.098              | 0.121                | 0.187                      | 0.031                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 1                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.222                | 0.249             | 0.474              | 0.661              | 0.007                | 0.0087                     | 0.004                         |
| MINIMUM :         | 0.058                | 0.000             | 0.003              | 0.000              | 0.000                | 0.0000                     | 0.000                         |
| ARITH. MEAN :     | 0.125                | 0.050             | 0.086              | 0.079              | 0.003                | 0.0027                     | 0.002                         |
| ARITH. STD. DEV : | 0.048                | 0.064             | 0.131              | 0.181              | 0.002                | 0.0022                     | 0.001                         |
| GEOM. MEAN :      | 0.117                | 0.037             | 0.042              | 0.044              | 0.003                | 0.0024                     | 0.002                         |
| 1ST QUARTILE :    | 0.080                | 0.021             | 0.024              | 0.000              | 0.001                | 0.0014                     | 0.001                         |
| 2ND QUARTILE :    | 0.121                | 0.030             | 0.039              | 0.024              | 0.002                | 0.0023                     | 0.001                         |
| 3RD QUARTILE :    | 0.158                | 0.055             | 0.059              | 0.042              | 0.004                | 0.0031                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00798              | 0.0013            | 0.0646             | 0.01586            | 1.1261               | 1.29                       | 0.24                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00012            | 0.1490               | 0.12                       | 0.04                          |
| ARITH. MEAN :     | 0.00302              | 0.0004            | 0.0085             | 0.00538            | 0.4345               | 0.76                       | 0.12                          |
| ARITH. STD. DEV : | 0.00310              | 0.0004            | 0.0172             | 0.00516            | 0.2997               | 0.38                       | 0.06                          |
| GEOM. MEAN :      | 0.00172              | 0.0004            | 0.0052             | 0.00247            | 0.3655               | 0.65                       | 0.11                          |
| 1ST QUARTILE :    | 0.00043              | 0.0001            | 0.0003             | 0.00057            | 0.2510               | 0.43                       | 0.07                          |
| 2ND QUARTILE :    | 0.00099              | 0.0002            | 0.0042             | 0.00389            | 0.3391               | 0.74                       | 0.12                          |
| 3RD QUARTILE :    | 0.00651              | 0.0009            | 0.0081             | 0.00976            | 0.4763               | 1.13                       | 0.14                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=DORSET LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 8.06                 | 5.63              | 0.317              | 0.348              | 0.499                | 0.383                      | 0.080                         |
| MINIMUM :         | 0.00                 | 0.24              | 0.034              | 0.013              | 0.000                | 0.000                      | 0.000                         |
| ARITH. MEAN :     | 3.76                 | 2.66              | 0.169              | 0.137              | 0.135                | 0.115                      | 0.037                         |
| ARITH. STD. DEV : | 2.35                 | 1.25              | 0.082              | 0.119              | 0.138                | 0.135                      | 0.022                         |
| GEOM. MEAN :      | 3.59                 | 2.26              | 0.145              | 0.077              | 0.124                | 0.170                      | 0.041                         |
| 1ST QUARTILE :    | 2.41                 | 2.11              | 0.097              | 0.025              | 0.059                | 0.000                      | 0.024                         |
| 2ND QUARTILE :    | 3.49                 | 2.51              | 0.169              | 0.162              | 0.100                | 0.022                      | 0.037                         |
| 3RD QUARTILE :    | 5.12                 | 3.03              | 0.229              | 0.242              | 0.180                | 0.231                      | 0.047                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.355                | 0.310             | 0.358              | 0.157              | 0.011                | 0.0101                     | 0.003                         |
| MINIMUM :         | 0.000                | 0.000             | 0.000              | 0.000              | 0.002                | 0.0001                     | 0.000                         |
| ARITH. MEAN :     | 0.123                | 0.067             | 0.082              | 0.032              | 0.005                | 0.0039                     | 0.002                         |
| ARITH. STD. DEV : | 0.102                | 0.087             | 0.106              | 0.045              | 0.004                | 0.0027                     | 0.001                         |
| GEOM. MEAN :      | 0.099                | 0.064             | 0.049              | 0.025              | 0.004                | 0.0029                     | 0.002                         |
| 1ST QUARTILE :    | 0.035                | 0.014             | 0.024              | 0.002              | 0.002                | 0.0023                     | 0.002                         |
| 2ND QUARTILE :    | 0.096                | 0.046             | 0.044              | 0.021              | 0.003                | 0.0029                     | 0.002                         |
| 3RD QUARTILE :    | 0.191                | 0.066             | 0.101              | 0.037              | 0.007                | 0.0060                     | 0.002                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 4                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00481              | 0.0012            | 0.0328             | 0.01040            | 0.9410               | 4.86                       | 0.53                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0010             | 0.00000            | 0.3004               | 0.08                       | 0.06                          |
| ARITH. MEAN :     | 0.00144              | 0.0006            | 0.0118             | 0.00343            | 0.6669               | 2.77                       | 0.31                          |
| ARITH. STD. DEV : | 0.00138              | 0.0004            | 0.0072             | 0.00418            | 0.1930               | 1.22                       | 0.13                          |
| GEOM. MEAN :      | 0.00130              | 0.0007            | 0.0097             | 0.00118            | 0.6362               | 2.18                       | 0.27                          |
| 1ST QUARTILE :    | 0.00050              | 0.0004            | 0.0091             | 0.00015            | 0.5426               | 2.09                       | 0.21                          |
| 2ND QUARTILE :    | 0.00083              | 0.0007            | 0.0106             | 0.00045            | 0.7084               | 2.77                       | 0.29                          |
| 3RD QUARTILE :    | 0.00244              | 0.0009            | 0.0131             | 0.00789            | 0.8254               | 3.26                       | 0.39                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-EAR FALLS LOVEL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 2.56                 | 1.66              | 0.069              | 1.020              | 0.271                | 0.330                      | 0.045                         |
| MINIMUM :         | 0.19                 | 0.19              | 0.000              | 0.000              | 0.000                | 0.142                      | 0.000                         |
| ARITH. MEAN :     | 1.00                 | 0.93              | 0.037              | 0.213              | 0.082                | 0.218                      | 0.019                         |
| ARITH. STD. DEV : | 0.73                 | 0.48              | 0.020              | 0.344              | 0.086                | 0.051                      | 0.012                         |
| GEOM. MEAN :      | 0.77                 | 0.79              | 0.036              | 0.113              | 0.076                | 0.213                      | 0.019                         |
| 1ST QUARTILE :    | 0.41                 | 0.50              | 0.021              | 0.054              | 0.023                | 0.177                      | 0.013                         |
| 2ND QUARTILE :    | 0.79                 | 0.97              | 0.031              | 0.073              | 0.068                | 0.209                      | 0.017                         |
| 3RD QUARTILE :    | 1.49                 | 1.30              | 0.053              | 0.128              | 0.089                | 0.244                      | 0.028                         |
| MISSING VALUES :  | 2                    | 2                 | 0                  | 0                  | 2                    | 2                          | 2                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.391                | 0.109             | 0.281              | 0.181              | 0.006                | 0.0068                     | 0.003                         |
| MINIMUM :         | 0.098                | 0.000             | 0.000              | 0.000              | 0.000                | 0.0000                     | 0.000                         |
| ARITH. MEAN :     | 0.166                | 0.040             | 0.070              | 0.037              | 0.002                | 0.0025                     | 0.001                         |
| ARITH. STD. DEV : | 0.082                | 0.035             | 0.078              | 0.053              | 0.002                | 0.0019                     | 0.001                         |
| GEOM. MEAN :      | 0.154                | 0.040             | 0.051              | 0.034              | 0.002                | 0.0023                     | 0.001                         |
| 1ST QUARTILE :    | 0.129                | 0.017             | 0.018              | 0.000              | 0.000                | 0.0009                     | 0.001                         |
| 2ND QUARTILE :    | 0.136                | 0.037             | 0.059              | 0.015              | 0.001                | 0.0022                     | 0.001                         |
| 3RD QUARTILE :    | 0.182                | 0.054             | 0.094              | 0.057              | 0.003                | 0.0034                     | 0.002                         |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 3                    | 2                          | 2                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.02580              | 0.0026            | 0.0381             | 0.02396            | 1.2818               | 1.45                       | 1.09                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00018            | 0.0521               | 0.24                       | 0.02                          |
| ARITH. MEAN :     | 0.00505              | 0.0006            | 0.0073             | 0.00700            | 0.4299               | 0.81                       | 0.25                          |
| ARITH. STD. DEV : | 0.00751              | 0.0007            | 0.0106             | 0.00793            | 0.3762               | 0.42                       | 0.36                          |
| GEOM. MEAN :      | 0.00332              | 0.0005            | 0.0060             | 0.00262            | 0.3064               | 0.69                       | 0.13                          |
| 1ST QUARTILE :    | 0.00071              | 0.0002            | 0.0015             | 0.00044            | 0.1916               | 0.31                       | 0.08                          |
| 2ND QUARTILE :    | 0.00222              | 0.0003            | 0.0059             | 0.00260            | 0.2773               | 0.83                       | 0.11                          |
| 3RD QUARTILE :    | 0.00744              | 0.0009            | 0.0068             | 0.01446            | 0.5631               | 1.07                       | 0.18                          |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 2                    | 2.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=GERALDTON LOVEL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 1.64                 | 1.58              | 0.089              | 0.156              | 0.689                | 0.275                      | 0.131                         |
| MINIMUM :         | 0.34                 | 0.66              | 0.009              | 0.017              | 0.000                | 0.082                      | 0.000                         |
| ARITH. MEAN :     | 0.89                 | 1.07              | 0.033              | 0.076              | 0.137                | 0.144                      | 0.029                         |
| ARITH. STD. DEV : | 0.43                 | 0.30              | 0.021              | 0.043              | 0.189                | 0.058                      | 0.033                         |
| GEOM. MEAN :      | 0.79                 | 1.03              | 0.027              | 0.062              | 0.111                | 0.135                      | 0.024                         |
| 1ST QUARTILE :    | 0.55                 | 0.77              | 0.015              | 0.037              | 0.012                | 0.106                      | 0.016                         |
| 2ND QUARTILE :    | 0.83                 | 1.05              | 0.029              | 0.085              | 0.058                | 0.134                      | 0.018                         |
| 3RD QUARTILE :    | 1.29                 | 1.32              | 0.043              | 0.111              | 0.209                | 0.151                      | 0.035                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.250                | 0.115             | 0.153              | 0.360              | 0.005                | 0.0050                     | 0.015                         |
| MINIMUM :         | 0.070                | 0.000             | 0.000              | 0.000              | 0.000                | 0.0000                     | 0.000                         |
| ARITH. MEAN :     | 0.132                | 0.046             | 0.042              | 0.059              | 0.001                | 0.0018                     | 0.002                         |
| ARITH. STD. DEV : | 0.056                | 0.032             | 0.040              | 0.105              | 0.001                | 0.0016                     | 0.004                         |
| GEOM. MEAN :      | 0.122                | 0.042             | 0.035              | 0.040              | 0.001                | 0.0020                     | 0.001                         |
| 1ST QUARTILE :    | 0.086                | 0.022             | 0.016              | 0.000              | 0.000                | 0.0004                     | 0.001                         |
| 2ND QUARTILE :    | 0.113                | 0.039             | 0.028              | 0.020              | 0.001                | 0.0012                     | 0.001                         |
| 3RD QUARTILE :    | 0.177                | 0.067             | 0.060              | 0.056              | 0.002                | 0.0032                     | 0.002                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00863              | 0.0013            | 0.0122             | 0.01340            | 0.9297               | 1.30                       | 0.20                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00011            | 0.2715               | 0.41                       | 0.03                          |
| ARITH. MEAN :     | 0.00244              | 0.0005            | 0.0039             | 0.00473            | 0.4511               | 0.80                       | 0.11                          |
| ARITH. STD. DEV : | 0.00291              | 0.0005            | 0.0033             | 0.00434            | 0.1686               | 0.28                       | 0.06                          |
| GEOM. MEAN :      | 0.00188              | 0.0005            | 0.0032             | 0.00218            | 0.4284               | 0.76                       | 0.09                          |
| 1ST QUARTILE :    | 0.00010              | 0.0001            | 0.0016             | 0.00036            | 0.3506               | 0.58                       | 0.06                          |
| 2ND QUARTILE :    | 0.00139              | 0.0003            | 0.0032             | 0.00399            | 0.3901               | 0.73                       | 0.10                          |
| 3RD QUARTILE :    | 0.00351              | 0.0010            | 0.0054             | 0.00779            | 0.5211               | 1.02                       | 0.16                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-GOLDEN LAKE LOVOL SITE NO.1

|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 7                    | 7                 | 7                  | 7                  | 7                    | 7                          | 7                             |
| MAXIMUM :         | 14.07                | 4.77              | 0.163              | 0.441              | 0.266                | 0.380                      | 0.074                         |
| MINIMUM :         | 2.81                 | 1.94              | 0.055              | 0.029              | 0.000                | 0.262                      | 0.029                         |
| ARITH. MEAN :     | 6.13                 | 2.89              | 0.109              | 0.267              | 0.105                | 0.324                      | 0.060                         |
| ARITH. STD. DEV : | 3.87                 | 0.91              | 0.039              | 0.148              | 0.104                | 0.053                      | 0.015                         |
| GEOM. MEAN :      | 5.31                 | 2.79              | 0.102              | 0.204              | 0.121                | 0.321                      | 0.058                         |
| 1ST QUARTILE :    | 2.83                 | 2.40              | 0.083              | 0.108              | 0.000                | 0.266                      | 0.059                         |
| 2ND QUARTILE :    | 5.18                 | 2.64              | 0.099              | 0.340              | 0.076                | 0.330                      | 0.062                         |
| 3RD QUARTILE :    | 7.10                 | 3.06              | 0.156              | 0.359              | 0.210                | 0.375                      | 0.071                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 7                    | 7                 | 7                  | 7                  | 7                    | 7                          | 7                             |
| MAXIMUM :         | 0.273                | 0.153             | 0.135              | 0.220              | 0.013                | 0.0120                     | 0.005                         |
| MINIMUM :         | 0.108                | 0.046             | 0.020              | 0.000              | 0.003                | 0.0042                     | 0.001                         |
| ARITH. MEAN :     | 0.197                | 0.085             | 0.053              | 0.112              | 0.006                | 0.0064                     | 0.004                         |
| ARITH. STD. DEV : | 0.064                | 0.041             | 0.039              | 0.084              | 0.003                | 0.0026                     | 0.001                         |
| GEOM. MEAN :      | 0.187                | 0.078             | 0.044              | 0.113              | 0.005                | 0.0061                     | 0.003                         |
| 1ST QUARTILE :    | 0.133                | 0.052             | 0.026              | 0.050              | 0.004                | 0.0044                     | 0.003                         |
| 2ND QUARTILE :    | 0.220                | 0.072             | 0.042              | 0.085              | 0.005                | 0.0058                     | 0.004                         |
| 3RD QUARTILE :    | 0.247                | 0.134             | 0.066              | 0.212              | 0.006                | 0.0067                     | 0.005                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 7                    | 7                 | 7                  | 7                  | 7                    | 7.00                       | 7.00                          |
| MAXIMUM :         | 0.02681              | 0.0017            | 0.0227             | 0.02162            | 1.0974               | 8.02                       | 0.53                          |
| MINIMUM :         | 0.00100              | 0.0003            | 0.0088             | 0.00283            | 0.5232               | 2.43                       | 0.08                          |
| ARITH. MEAN :     | 0.00533              | 0.0012            | 0.0160             | 0.00802            | 0.8001               | 4.03                       | 0.38                          |
| ARITH. STD. DEV : | 0.00951              | 0.0004            | 0.0055             | 0.00681            | 0.1807               | 1.89                       | 0.18                          |
| GEOM. MEAN :      | 0.00241              | 0.0011            | 0.0150             | 0.00617            | 0.7822               | 3.74                       | 0.32                          |
| 1ST QUARTILE :    | 0.00134              | 0.0010            | 0.0092             | 0.00283            | 0.6837               | 3.00                       | 0.19                          |
| 2ND QUARTILE :    | 0.00152              | 0.0012            | 0.0182             | 0.00510            | 0.8088               | 3.24                       | 0.44                          |
| 3RD QUARTILE :    | 0.00350              | 0.0016            | 0.0204             | 0.01224            | 0.9093               | 4.43                       | 0.51                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |



ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-GOWGANDA LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 10.43                | 2.92              | 0.137              | 0.276              | 0.221                | 0.379                      | 0.052                         |
| MINIMUM :         | 1.68                 | 1.43              | 0.029              | 0.060              | 0.000                | 0.086                      | 0.008                         |
| ARITH. MEAN :     | 4.30                 | 2.16              | 0.076              | 0.127              | 0.068                | 0.189                      | 0.031                         |
| ARITH. STD. DEV : | 2.55                 | 0.48              | 0.033              | 0.058              | 0.081                | 0.099                      | 0.015                         |
| GEOM. MEAN :      | 3.69                 | 2.11              | 0.069              | 0.117              | 0.066                | 0.168                      | 0.027                         |
| 1ST QUARTILE :    | 2.29                 | 1.69              | 0.056              | 0.084              | 0.000                | 0.100                      | 0.021                         |
| 2ND QUARTILE :    | 3.90                 | 2.28              | 0.071              | 0.117              | 0.022                | 0.169                      | 0.031                         |
| 3RD QUARTILE :    | 6.05                 | 2.56              | 0.093              | 0.162              | 0.134                | 0.263                      | 0.046                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.321                | 0.256             | 0.231              | 0.380              | 0.010                | 0.0070                     | 0.007                         |
| MINIMUM :         | 0.060                | 0.000             | 0.011              | 0.000              | 0.000                | 0.0021                     | 0.002                         |
| ARITH. MEAN :     | 0.152                | 0.072             | 0.091              | 0.096              | 0.004                | 0.0036                     | 0.004                         |
| ARITH. STD. DEV : | 0.085                | 0.073             | 0.078              | 0.138              | 0.004                | 0.0017                     | 0.002                         |
| GEOM. MEAN :      | 0.131                | 0.065             | 0.063              | 0.067              | 0.004                | 0.0033                     | 0.004                         |
| 1ST QUARTILE :    | 0.073                | 0.029             | 0.027              | 0.009              | 0.002                | 0.0022                     | 0.003                         |
| 2ND QUARTILE :    | 0.130                | 0.045             | 0.064              | 0.038              | 0.003                | 0.0035                     | 0.004                         |
| 3RD QUARTILE :    | 0.226                | 0.098             | 0.160              | 0.158              | 0.009                | 0.0045                     | 0.006                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00512              | 0.0007            | 0.0295             | 0.01148            | 1.0586               | 5.97                       | 0.37                          |
| MINIMUM :         | 0.00061              | 0.0000            | 0.0041             | 0.00022            | 0.4599               | 1.64                       | 0.11                          |
| ARITH. MEAN :     | 0.00201              | 0.0003            | 0.0110             | 0.00272            | 0.6467               | 2.87                       | 0.20                          |
| ARITH. STD. DEV : | 0.00155              | 0.0002            | 0.0061             | 0.00348            | 0.2038               | 1.27                       | 0.07                          |
| GEOM. MEAN :      | 0.00156              | 0.0004            | 0.0099             | 0.00124            | 0.6214               | 2.65                       | 0.19                          |
| 1ST QUARTILE :    | 0.00100              | 0.0000            | 0.0077             | 0.00034            | 0.4859               | 1.81                       | 0.15                          |
| 2ND QUARTILE :    | 0.00125              | 0.0004            | 0.0099             | 0.00180            | 0.5991               | 2.49                       | 0.19                          |
| 3RD QUARTILE :    | 0.00377              | 0.0005            | 0.0118             | 0.00389            | 0.7620               | 3.84                       | 0.25                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-KILLARNEY LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 13.05                | 4.81              | 0.166              | 0.372              | 0.399                | 0.398                      | 0.062                         |
| MINIMUM :         | 1.77                 | 1.34              | 0.044              | 0.116              | 0.000                | 0.104                      | 0.008                         |
| ARITH. MEAN :     | 6.86                 | 2.74              | 0.113              | 0.221              | 0.145                | 0.222                      | 0.037                         |
| ARITH. STD. DEV : | 3.22                 | 1.09              | 0.038              | 0.068              | 0.118                | 0.086                      | 0.017                         |
| GEOM. MEAN :      | 6.01                 | 2.53              | 0.106              | 0.211              | 0.121                | 0.208                      | 0.032                         |
| 1ST QUARTILE :    | 3.65                 | 1.66              | 0.079              | 0.190              | 0.045                | 0.152                      | 0.022                         |
| 2ND QUARTILE :    | 7.61                 | 2.69              | 0.118              | 0.220              | 0.144                | 0.212                      | 0.037                         |
| 3RD QUARTILE :    | 8.88                 | 3.60              | 0.148              | 0.250              | 0.172                | 0.256                      | 0.052                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.210                | 0.214             | 0.218              | 0.292              | 0.012                | 0.0082                     | 0.011                         |
| MINIMUM :         | 0.081                | 0.000             | 0.018              | 0.000              | 0.000                | 0.0019                     | 0.002                         |
| ARITH. MEAN :     | 0.131                | 0.097             | 0.100              | 0.078              | 0.007                | 0.0044                     | 0.005                         |
| ARITH. STD. DEV : | 0.052                | 0.065             | 0.071              | 0.103              | 0.004                | 0.0020                     | 0.003                         |
| GEOM. MEAN :      | 0.122                | 0.089             | 0.076              | 0.058              | 0.006                | 0.0040                     | 0.005                         |
| 1ST QUARTILE :    | 0.085                | 0.052             | 0.036              | 0.018              | 0.003                | 0.0027                     | 0.003                         |
| 2ND QUARTILE :    | 0.107                | 0.082             | 0.081              | 0.039              | 0.007                | 0.0041                     | 0.005                         |
| 3RD QUARTILE :    | 0.193                | 0.155             | 0.175              | 0.087              | 0.010                | 0.0061                     | 0.007                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 2                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00789              | 0.0011            | 0.0159             | 0.01952            | 1.2780               | 7.71                       | 0.54                          |
| MINIMUM :         | 0.00026              | 0.0000            | 0.0069             | 0.00025            | 0.4925               | 2.24                       | 0.22                          |
| ARITH. MEAN :     | 0.00340              | 0.0005            | 0.0108             | 0.00387            | 0.7691               | 4.34                       | 0.33                          |
| ARITH. STD. DEV : | 0.00231              | 0.0004            | 0.0030             | 0.00614            | 0.2138               | 1.53                       | 0.09                          |
| GEOM. MEAN :      | 0.00257              | 0.0006            | 0.0105             | 0.00124            | 0.7442               | 4.09                       | 0.32                          |
| 1ST QUARTILE :    | 0.00180              | 0.0001            | 0.0082             | 0.00029            | 0.5904               | 2.81                       | 0.25                          |
| 2ND QUARTILE :    | 0.00283              | 0.0005            | 0.0104             | 0.00062            | 0.8030               | 4.58                       | 0.32                          |
| 3RD QUARTILE :    | 0.00469              | 0.0007            | 0.0134             | 0.00605            | 0.8582               | 5.13                       | 0.41                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=MATTAWA LOVOL SITE NO.1

|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 9.57                 | 3.89              | 0.118              | 0.345              | 0.336                | 0.457                      | 0.087                         |
| MINIMUM :         | 1.82                 | 0.19              | 0.013              | 0.045              | 0.000                | 0.115                      | 0.004                         |
| ARITH. MEAN :     | 5.28                 | 2.26              | 0.065              | 0.175              | 0.134                | 0.268                      | 0.048                         |
| ARITH. STD. DEV : | 2.73                 | 0.93              | 0.028              | 0.087              | 0.113                | 0.110                      | 0.025                         |
| GEOM. MEAN :      | 4.66                 | 1.90              | 0.058              | 0.152              | 0.112                | 0.246                      | 0.038                         |
| 1ST QUARTILE :    | 3.37                 | 1.87              | 0.049              | 0.109              | 0.054                | 0.146                      | 0.029                         |
| 2ND QUARTILE :    | 4.42                 | 2.16              | 0.061              | 0.163              | 0.097                | 0.276                      | 0.054                         |
| 3RD QUARTILE :    | 8.41                 | 2.76              | 0.085              | 0.246              | 0.252                | 0.338                      | 0.066                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 0.868                | 0.624             | 0.645              | 0.501              | 0.017                | 0.0191                     | 0.004                         |
| MINIMUM :         | 0.050                | 0.000             | 0.007              | 0.000              | 0.000                | 0.0000                     | 0.001                         |
| ARITH. MEAN :     | 0.226                | 0.278             | 0.282              | 0.158              | 0.006                | 0.0098                     | 0.003                         |
| ARITH. STD. DEV : | 0.224                | 0.231             | 0.249              | 0.168              | 0.007                | 0.0064                     | 0.001                         |
| GEOM. MEAN :      | 0.171                | 0.226             | 0.154              | 0.114              | 0.006                | 0.0092                     | 0.003                         |
| 1ST QUARTILE :    | 0.103                | 0.061             | 0.042              | 0.014              | 0.000                | 0.0039                     | 0.002                         |
| 2ND QUARTILE :    | 0.149                | 0.180             | 0.245              | 0.118              | 0.005                | 0.0088                     | 0.003                         |
| 3RD QUARTILE :    | 0.246                | 0.566             | 0.634              | 0.292              | 0.013                | 0.0160                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11.00                      | 11.00                         |
| MAXIMUM :         | 0.00287              | 0.0016            | 0.0335             | 0.02098            | 1.1978               | 5.50                       | 0.46                          |
| MINIMUM :         | 0.00077              | 0.0000            | 0.0017             | 0.00000            | 0.3625               | 0.97                       | 0.06                          |
| ARITH. MEAN :     | 0.00167              | 0.0010            | 0.0154             | 0.00465            | 0.6811               | 3.39                       | 0.24                          |
| ARITH. STD. DEV : | 0.00066              | 0.0005            | 0.0079             | 0.00653            | 0.2276               | 1.39                       | 0.11                          |
| GEOM. MEAN :      | 0.00156              | 0.0010            | 0.0129             | 0.00224            | 0.6491               | 3.10                       | 0.21                          |
| 1ST QUARTILE :    | 0.00131              | 0.0008            | 0.0113             | 0.00050            | 0.5429               | 2.66                       | 0.15                          |
| 2ND QUARTILE :    | 0.00151              | 0.0010            | 0.0157             | 0.00110            | 0.6243               | 2.93                       | 0.24                          |
| 3RD QUARTILE :    | 0.00215              | 0.0013            | 0.0190             | 0.00814            | 0.8226               | 4.83                       | 0.30                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-MCKELLAR LOVOL SITE NO.1

|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 13.49                | 5.19              | 0.213              | 0.413              | 0.518                | 0.614                      | 0.054                         |
| MINIMUM :         | 2.34                 | 1.52              | 0.046              | 0.096              | 0.000                | 0.134                      | 0.007                         |
| ARITH. MEAN :     | 5.86                 | 2.84              | 0.126              | 0.243              | 0.140                | 0.286                      | 0.034                         |
| ARITH. STD. DEV : | 3.65                 | 0.92              | 0.048              | 0.108              | 0.152                | 0.160                      | 0.015                         |
| GEOM. MEAN :      | 5.00                 | 2.71              | 0.117              | 0.217              | 0.168                | 0.250                      | 0.030                         |
| 1ST QUARTILE :    | 3.31                 | 2.27              | 0.091              | 0.120              | 0.000                | 0.149                      | 0.024                         |
| 2ND QUARTILE :    | 3.91                 | 2.58              | 0.115              | 0.266              | 0.115                | 0.214                      | 0.032                         |
| 3RD QUARTILE :    | 8.23                 | 3.30              | 0.171              | 0.307              | 0.193                | 0.430                      | 0.048                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.422                | 0.244             | 0.159              | 0.319              | 0.062                | 0.0063                     | 0.024                         |
| MINIMUM :         | 0.039                | 0.000             | 0.033              | 0.000              | 0.000                | 0.0018                     | 0.002                         |
| ARITH. MEAN :     | 0.176                | 0.086             | 0.070              | 0.074              | 0.010                | 0.0038                     | 0.004                         |
| ARITH. STD. DEV : | 0.116                | 0.066             | 0.036              | 0.093              | 0.017                | 0.0012                     | 0.006                         |
| GEOM. MEAN :      | 0.140                | 0.090             | 0.064              | 0.056              | 0.006                | 0.0036                     | 0.003                         |
| 1ST QUARTILE :    | 0.078                | 0.053             | 0.045              | 0.020              | 0.002                | 0.0031                     | 0.002                         |
| 2ND QUARTILE :    | 0.142                | 0.063             | 0.058              | 0.042              | 0.004                | 0.0036                     | 0.003                         |
| 3RD QUARTILE :    | 0.279                | 0.123             | 0.083              | 0.109              | 0.011                | 0.0040                     | 0.004                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00458              | 0.0010            | 0.0298             | 0.01115            | 2.1272               | 7.57                       | 0.59                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0015             | 0.00006            | 0.1211               | 1.68                       | 0.14                          |
| ARITH. MEAN :     | 0.00185              | 0.0005            | 0.0119             | 0.00288            | 0.8477               | 3.88                       | 0.37                          |
| ARITH. STD. DEV : | 0.00140              | 0.0004            | 0.0065             | 0.00343            | 0.5035               | 1.76                       | 0.15                          |
| GEOM. MEAN :      | 0.00159              | 0.0006            | 0.0101             | 0.00119            | 0.7168               | 3.55                       | 0.34                          |
| 1ST QUARTILE :    | 0.00086              | 0.0001            | 0.0089             | 0.00040            | 0.6525               | 2.77                       | 0.24                          |
| 2ND QUARTILE :    | 0.00130              | 0.0006            | 0.0111             | 0.00177            | 0.6966               | 3.35                       | 0.38                          |
| 3RD QUARTILE :    | 0.00341              | 0.0008            | 0.0139             | 0.00522            | 0.8521               | 4.87                       | 0.49                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=MOONBEAM LOVOL SITE NO.1

|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 12                   | 12                | 12                 | 12                 | 12                   | 12                         | 12                            |
| MAXIMUM :         | 3.86                 | 1.97              | 0.047              | 0.148              | 2.013                | 0.262                      | 0.058                         |
| MINIMUM :         | 0.49                 | 0.86              | 0.010              | 0.026              | 0.000                | 0.098                      | 0.008                         |
| ARITH. MEAN :     | 1.51                 | 1.43              | 0.026              | 0.071              | 0.350                | 0.194                      | 0.032                         |
| ARITH. STD. DEV : | 0.98                 | 0.32              | 0.013              | 0.031              | 0.572                | 0.049                      | 0.014                         |
| GEOM. MEAN :      | 1.25                 | 1.39              | 0.023              | 0.065              | 0.170                | 0.188                      | 0.029                         |
| 1ST QUARTILE :    | 0.64                 | 1.23              | 0.015              | 0.049              | 0.064                | 0.169                      | 0.023                         |
| 2ND QUARTILE :    | 1.43                 | 1.44              | 0.023              | 0.070              | 0.118                | 0.191                      | 0.029                         |
| 3RD QUARTILE :    | 1.78                 | 1.65              | 0.041              | 0.087              | 0.522                | 0.245                      | 0.043                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 12                   | 12                | 12                 | 12                 | 12                   | 12                         | 12                            |
| MAXIMUM :         | 0.228                | 1.450             | 0.359              | 0.461              | 0.011                | 0.0096                     | 0.006                         |
| MINIMUM :         | 0.091                | 0.000             | 0.016              | 0.000              | 0.000                | 0.0022                     | 0.001                         |
| ARITH. MEAN :     | 0.155                | 0.193             | 0.135              | 0.106              | 0.004                | 0.0043                     | 0.003                         |
| ARITH. STD. DEV : | 0.049                | 0.405             | 0.122              | 0.164              | 0.003                | 0.0024                     | 0.001                         |
| GEOM. MEAN :      | 0.147                | 0.081             | 0.081              | 0.074              | 0.004                | 0.0037                     | 0.002                         |
| 1ST QUARTILE :    | 0.104                | 0.029             | 0.029              | 0.004              | 0.002                | 0.0025                     | 0.002                         |
| 2ND QUARTILE :    | 0.167                | 0.049             | 0.089              | 0.040              | 0.005                | 0.0030                     | 0.002                         |
| 3RD QUARTILE :    | 0.196                | 0.129             | 0.246              | 0.129              | 0.006                | 0.0059                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 12                   | 12                | 12                 | 12                 | 12                   | 12.00                      | 12.00                         |
| MAXIMUM :         | 0.00565              | 0.0009            | 0.0186             | 0.01698            | 0.8947               | 2.37                       | 0.18                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0032             | 0.00013            | 0.3049               | 0.53                       | 0.04                          |
| ARITH. MEAN :     | 0.00162              | 0.0004            | 0.0085             | 0.00372            | 0.4540               | 1.23                       | 0.10                          |
| ARITH. STD. DEV : | 0.00183              | 0.0003            | 0.0041             | 0.00531            | 0.1512               | 0.50                       | 0.04                          |
| GEOM. MEAN :      | 0.00116              | 0.0004            | 0.0077             | 0.00119            | 0.4370               | 1.13                       | 0.09                          |
| 1ST QUARTILE :    | 0.00021              | 0.0002            | 0.0057             | 0.00028            | 0.3662               | 0.87                       | 0.07                          |
| 2ND QUARTILE :    | 0.00083              | 0.0004            | 0.0070             | 0.00084            | 0.4180               | 1.24                       | 0.10                          |
| 3RD QUARTILE :    | 0.00332              | 0.0007            | 0.0112             | 0.00632            | 0.4835               | 1.41                       | 0.12                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-MOOSONEE LOVOL SITE NO.1

|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 1.77                 | 2.08              | 0.030              | 0.082              | 0.355                | 0.639                      | 0.040                         |
| MINIMUM :         | 0.22                 | 0.43              | 0.000              | 0.000              | 0.000                | 0.132                      | 0.006                         |
| ARITH. MEAN :     | 0.88                 | 1.04              | 0.016              | 0.037              | 0.079                | 0.316                      | 0.020                         |
| ARITH. STD. DEV : | 0.47                 | 0.42              | 0.007              | 0.022              | 0.092                | 0.129                      | 0.010                         |
| GEOM. MEAN :      | 0.74                 | 0.97              | 0.016              | 0.034              | 0.072                | 0.293                      | 0.018                         |
| 1ST QUARTILE :    | 0.44                 | 0.67              | 0.011              | 0.020              | 0.031                | 0.229                      | 0.013                         |
| 2ND QUARTILE :    | 0.95                 | 1.05              | 0.016              | 0.038              | 0.057                | 0.288                      | 0.017                         |
| 3RD QUARTILE :    | 1.14                 | 1.20              | 0.020              | 0.051              | 0.080                | 0.371                      | 0.027                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.347                | 0.068             | 0.062              | 0.265              | 0.008                | 0.0247                     | 0.003                         |
| MINIMUM :         | 0.096                | 0.000             | 0.011              | 0.000              | 0.000                | 0.0009                     | 0.001                         |
| ARITH. MEAN :     | 0.218                | 0.026             | 0.023              | 0.069              | 0.003                | 0.0036                     | 0.002                         |
| ARITH. STD. DEV : | 0.076                | 0.024             | 0.015              | 0.089              | 0.003                | 0.0064                     | 0.001                         |
| GEOM. MEAN :      | 0.204                | 0.028             | 0.020              | 0.064              | 0.003                | 0.0019                     | 0.001                         |
| 1ST QUARTILE :    | 0.156                | 0.004             | 0.012              | 0.013              | 0.001                | 0.0011                     | 0.001                         |
| 2ND QUARTILE :    | 0.244                | 0.021             | 0.016              | 0.042              | 0.002                | 0.0013                     | 0.001                         |
| 3RD QUARTILE :    | 0.256                | 0.052             | 0.031              | 0.068              | 0.006                | 0.0028                     | 0.002                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00908              | 0.0029            | 0.0080             | 0.01726            | 0.5847               | 1.36                       | 0.10                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00000            | 0.0926               | 0.25                       | 0.02                          |
| ARITH. MEAN :     | 0.00174              | 0.0005            | 0.0035             | 0.00408            | 0.3341               | 0.79                       | 0.05                          |
| ARITH. STD. DEV : | 0.00263              | 0.0008            | 0.0022             | 0.00583            | 0.1431               | 0.33                       | 0.02                          |
| GEOM. MEAN :      | 0.00129              | 0.0004            | 0.0033             | 0.00115            | 0.2999               | 0.71                       | 0.05                          |
| 1ST QUARTILE :    | 0.00000              | 0.0000            | 0.0020             | 0.00016            | 0.2257               | 0.51                       | 0.03                          |
| 2ND QUARTILE :    | 0.00046              | 0.0002            | 0.0033             | 0.00096            | 0.3118               | 0.79                       | 0.06                          |
| 3RD QUARTILE :    | 0.00315              | 0.0007            | 0.0048             | 0.00606            | 0.4558               | 1.02                       | 0.07                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-PALMERSTON LOVEL SITE NO.1

|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 18.52                | 8.06              | 0.254              | 0.928              | 0.815                | 0.650                      | 0.089                         |
| MINIMUM :         | 0.36                 | 0.11              | 0.000              | 0.156              | 0.233                | 0.199                      | 0.000                         |
| ARITH. MEAN :     | 6.57                 | 3.61              | 0.129              | 0.708              | 0.411                | 0.402                      | 0.040                         |
| ARITH. STD. DEV : | 5.02                 | 1.85              | 0.073              | 0.206              | 0.191                | 0.128                      | 0.025                         |
| GEOM. MEAN :      | 4.70                 | 2.78              | 0.129              | 0.658              | 0.377                | 0.383                      | 0.036                         |
| 1ST QUARTILE :    | 3.29                 | 2.76              | 0.080              | 0.621              | 0.263                | 0.300                      | 0.017                         |
| 2ND QUARTILE :    | 4.39                 | 3.41              | 0.111              | 0.729              | 0.349                | 0.401                      | 0.045                         |
| 3RD QUARTILE :    | 8.93                 | 4.39              | 0.178              | 0.869              | 0.571                | 0.487                      | 0.053                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.275                | 0.236             | 0.224              | 0.223              | 0.022                | 0.0134                     | 0.013                         |
| MINIMUM :         | 0.071                | 0.044             | 0.000              | 0.045              | 0.000                | 0.0023                     | 0.001                         |
| ARITH. MEAN :     | 0.148                | 0.117             | 0.103              | 0.119              | 0.009                | 0.0069                     | 0.003                         |
| ARITH. STD. DEV : | 0.061                | 0.055             | 0.065              | 0.066              | 0.007                | 0.0029                     | 0.003                         |
| GEOM. MEAN :      | 0.137                | 0.106             | 0.100              | 0.102              | 0.009                | 0.0063                     | 0.002                         |
| 1ST QUARTILE :    | 0.093                | 0.069             | 0.058              | 0.062              | 0.004                | 0.0054                     | 0.002                         |
| 2ND QUARTILE :    | 0.144                | 0.109             | 0.089              | 0.095              | 0.007                | 0.0066                     | 0.002                         |
| 3RD QUARTILE :    | 0.180                | 0.160             | 0.135              | 0.191              | 0.015                | 0.0083                     | 0.003                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 2                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00524              | 0.0014            | 0.0353             | 0.02136            | 1.8609               | 10.38                      | 1.16                          |
| MINIMUM :         | 0.00035              | 0.0006            | 0.0031             | 0.00023            | 0.4073               | 0.22                       | 0.16                          |
| ARITH. MEAN :     | 0.00209              | 0.0011            | 0.0199             | 0.00600            | 0.9567               | 4.49                       | 0.84                          |
| ARITH. STD. DEV : | 0.00144              | 0.0003            | 0.0084             | 0.00653            | 0.4443               | 2.58                       | 0.25                          |
| GEOM. MEAN :      | 0.00164              | 0.0010            | 0.0176             | 0.00247            | 0.8755               | 3.47                       | 0.77                          |
| 1ST QUARTILE :    | 0.00089              | 0.0008            | 0.0155             | 0.00053            | 0.6998               | 3.08                       | 0.79                          |
| 2ND QUARTILE :    | 0.00172              | 0.0011            | 0.0193             | 0.00469            | 0.8826               | 4.08                       | 0.84                          |
| 3RD QUARTILE :    | 0.00307              | 0.0013            | 0.0236             | 0.01056            | 1.0463               | 5.57                       | 0.99                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-PICKLE LAKE LOVEL SITE NO.1

|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 2.00                 | 1.29              | 0.077              | 0.123              | 0.875                | 0.399                      | 0.037                         |
| MINIMUM :         | 0.00                 | 0.35              | 0.012              | 0.012              | 0.022                | 0.081                      | 0.007                         |
| ARITH. MEAN :     | 0.80                 | 0.84              | 0.027              | 0.052              | 0.339                | 0.200                      | 0.018                         |
| ARITH. STD. DEV : | 0.63                 | 0.33              | 0.019              | 0.031              | 0.294                | 0.098                      | 0.011                         |
| GEOM. MEAN :      | 0.71                 | 0.78              | 0.023              | 0.045              | 0.198                | 0.180                      | 0.015                         |
| 1ST QUARTILE :    | 0.39                 | 0.51              | 0.014              | 0.034              | 0.055                | 0.124                      | 0.009                         |
| 2ND QUARTILE :    | 0.53                 | 0.86              | 0.020              | 0.046              | 0.294                | 0.184                      | 0.016                         |
| 3RD QUARTILE :    | 1.23                 | 1.24              | 0.033              | 0.076              | 0.566                | 0.259                      | 0.029                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 0.249                | 0.528             | 0.600              | 0.308              | 0.010                | 0.0153                     | 0.018                         |
| MINIMUM :         | 0.072                | 0.017             | 0.003              | 0.000              | 0.001                | 0.0006                     | 0.001                         |
| ARITH. MEAN :     | 0.141                | 0.171             | 0.170              | 0.080              | 0.005                | 0.0041                     | 0.005                         |
| ARITH. STD. DEV : | 0.058                | 0.175             | 0.202              | 0.090              | 0.004                | 0.0043                     | 0.006                         |
| GEOM. MEAN :      | 0.131                | 0.090             | 0.070              | 0.048              | 0.004                | 0.0026                     | 0.003                         |
| 1ST QUARTILE :    | 0.100                | 0.022             | 0.023              | 0.006              | 0.002                | 0.0011                     | 0.001                         |
| 2ND QUARTILE :    | 0.109                | 0.106             | 0.068              | 0.053              | 0.004                | 0.0022                     | 0.002                         |
| 3RD QUARTILE :    | 0.178                | 0.303             | 0.337              | 0.127              | 0.010                | 0.0063                     | 0.010                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11.00                      | 11.00                         |
| MAXIMUM :         | 0.00622              | 0.0014            | 0.0192             | 0.01929            | 0.8530               | 1.43                       | 0.16                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00013            | 0.1720               | 0.17                       | 0.04                          |
| ARITH. MEAN :     | 0.00268              | 0.0005            | 0.0050             | 0.00594            | 0.3816               | 0.68                       | 0.08                          |
| ARITH. STD. DEV : | 0.00207              | 0.0004            | 0.0054             | 0.00618            | 0.2078               | 0.36                       | 0.04                          |
| GEOM. MEAN :      | 0.00221              | 0.0004            | 0.0036             | 0.00218            | 0.3368               | 0.59                       | 0.07                          |
| 1ST QUARTILE :    | 0.00116              | 0.0002            | 0.0009             | 0.00035            | 0.2015               | 0.37                       | 0.05                          |
| 2ND QUARTILE :    | 0.00229              | 0.0003            | 0.0036             | 0.00642            | 0.3363               | 0.63                       | 0.06                          |
| 3RD QUARTILE :    | 0.00470              | 0.0009            | 0.0058             | 0.01044            | 0.4763               | 0.83                       | 0.10                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |



ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=PORT STANLEY LOVEL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 13.74                | 8.92              | 0.256              | 1.217              | 0.853                | 0.847                      | 0.143                         |
| MINIMUM :         | 0.56                 | 0.20              | 0.073              | 0.139              | 0.000                | 0.107                      | 0.004                         |
| ARITH. MEAN :     | 7.68                 | 4.20              | 0.176              | 0.761              | 0.437                | 0.445                      | 0.062                         |
| ARITH. STD. DEV : | 3.53                 | 2.50              | 0.064              | 0.278              | 0.289                | 0.183                      | 0.041                         |
| GEOM. MEAN :      | 6.39                 | 3.17              | 0.163              | 0.687              | 0.356                | 0.405                      | 0.045                         |
| 1ST QUARTILE :    | 5.73                 | 2.37              | 0.110              | 0.552              | 0.203                | 0.321                      | 0.027                         |
| 2ND QUARTILE :    | 7.05                 | 3.73              | 0.187              | 0.811              | 0.407                | 0.443                      | 0.053                         |
| 3RD QUARTILE :    | 9.82                 | 6.13              | 0.229              | 0.956              | 0.710                | 0.510                      | 0.095                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.328                | 2.360             | 0.466              | 0.591              | 0.030                | 0.0369                     | 0.005                         |
| MINIMUM :         | 0.067                | 0.009             | 0.003              | 0.000              | 0.000                | 0.0010                     | 0.001                         |
| ARITH. MEAN :     | 0.158                | 0.344             | 0.156              | 0.129              | 0.010                | 0.0133                     | 0.003                         |
| ARITH. STD. DEV : | 0.076                | 0.617             | 0.135              | 0.173              | 0.009                | 0.0099                     | 0.001                         |
| GEOM. MEAN :      | 0.144                | 0.162             | 0.091              | 0.082              | 0.007                | 0.0096                     | 0.003                         |
| 1ST QUARTILE :    | 0.107                | 0.121             | 0.055              | 0.016              | 0.004                | 0.0056                     | 0.002                         |
| 2ND QUARTILE :    | 0.129                | 0.148             | 0.107              | 0.070              | 0.006                | 0.0106                     | 0.003                         |
| 3RD QUARTILE :    | 0.191                | 0.282             | 0.249              | 0.138              | 0.015                | 0.0197                     | 0.005                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00645              | 0.0024            | 0.0350             | 0.01251            | 1.8809               | 7.74                       | 1.44                          |
| MINIMUM :         | 0.00080              | 0.0004            | 0.0006             | 0.00017            | 0.5790               | 0.35                       | 0.21                          |
| ARITH. MEAN :     | 0.00271              | 0.0015            | 0.0267             | 0.00382            | 1.0906               | 5.24                       | 0.94                          |
| ARITH. STD. DEV : | 0.00185              | 0.0006            | 0.0109             | 0.00424            | 0.4105               | 1.83                       | 0.32                          |
| GEOM. MEAN :      | 0.00221              | 0.0013            | 0.0205             | 0.00159            | 1.0245               | 4.47                       | 0.86                          |
| 1ST QUARTILE :    | 0.00140              | 0.0009            | 0.0208             | 0.00047            | 0.7944               | 4.51                       | 0.74                          |
| 2ND QUARTILE :    | 0.00168              | 0.0017            | 0.0307             | 0.00146            | 0.9411               | 5.77                       | 0.98                          |
| 3RD QUARTILE :    | 0.00428              | 0.0018            | 0.0342             | 0.00804            | 1.4759               | 6.12                       | 1.16                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

STATION=QUETICO CENTRE LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 1.88                 | 2.71              | 0.230              | 0.522              | 0.346                | 0.418                      | 0.182                         |
| MINIMUM :         | 0.26                 | 0.04              | 0.012              | 0.029              | 0.000                | 0.112                      | 0.002                         |
| ARITH. MEAN :     | 0.91                 | 1.01              | 0.064              | 0.121              | 0.140                | 0.200                      | 0.039                         |
| ARITH. STD. DEV : | 0.55                 | 0.74              | 0.067              | 0.142              | 0.131                | 0.099                      | 0.051                         |
| GEOM. MEAN :      | 0.76                 | 0.66              | 0.042              | 0.081              | 0.103                | 0.183                      | 0.021                         |
| 1ST QUARTILE :    | 0.48                 | 0.41              | 0.021              | 0.048              | 0.028                | 0.123                      | 0.008                         |
| 2ND QUARTILE :    | 0.74                 | 0.95              | 0.040              | 0.063              | 0.093                | 0.175                      | 0.026                         |
| 3RD QUARTILE :    | 1.50                 | 1.39              | 0.087              | 0.125              | 0.303                | 0.194                      | 0.050                         |
| MISSING VALUES :  | 1                    | 0                 | 1                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11                         | 11                            |
| MAXIMUM :         | 0.368                | 0.158             | 0.187              | 0.166              | 0.011                | 0.0066                     | 0.004                         |
| MINIMUM :         | 0.051                | 0.016             | 0.000              | 0.000              | 0.000                | 0.0009                     | 0.000                         |
| ARITH. MEAN :     | 0.176                | 0.070             | 0.062              | 0.043              | 0.003                | 0.0035                     | 0.002                         |
| ARITH. STD. DEV : | 0.098                | 0.046             | 0.069              | 0.052              | 0.003                | 0.0020                     | 0.001                         |
| GEOM. MEAN :      | 0.151                | 0.055             | 0.033              | 0.031              | 0.002                | 0.0029                     | 0.001                         |
| 1ST QUARTILE :    | 0.089                | 0.022             | 0.005              | 0.006              | 0.000                | 0.0015                     | 0.001                         |
| 2ND QUARTILE :    | 0.163                | 0.064             | 0.038              | 0.027              | 0.002                | 0.0031                     | 0.002                         |
| 3RD QUARTILE :    | 0.249                | 0.101             | 0.101              | 0.075              | 0.004                | 0.0056                     | 0.002                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 11                   | 11                | 11                 | 11                 | 11                   | 11.00                      | 11.00                         |
| MAXIMUM :         | 0.00687              | 0.0014            | 0.0090             | 0.01388            | 0.8515               | 1.26                       | 0.75                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00017            | 0.0000               | 0.26                       | 0.04                          |
| ARITH. MEAN :     | 0.00297              | 0.0005            | 0.0039             | 0.00574            | 0.3822               | 0.78                       | 0.19                          |
| ARITH. STD. DEV : | 0.00243              | 0.0004            | 0.0032             | 0.00557            | 0.3066               | 0.33                       | 0.21                          |
| GEOM. MEAN :      | 0.00248              | 0.0005            | 0.0030             | 0.00226            | 0.4152               | 0.71                       | 0.13                          |
| 1ST QUARTILE :    | 0.00093              | 0.0002            | 0.0007             | 0.00035            | 0.1251               | 0.50                       | 0.07                          |
| 2ND QUARTILE :    | 0.00249              | 0.0003            | 0.0040             | 0.00552            | 0.3180               | 0.77                       | 0.15                          |
| 3RD QUARTILE :    | 0.00468              | 0.0009            | 0.0068             | 0.01159            | 0.7246               | 1.07                       | 0.20                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=SHALLOW LAKE LOVEL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 15.33                | 5.26              | 0.163              | 0.784              | 0.531                | 0.395                      | 0.127                         |
| MINIMUM :         | 0.07                 | 0.00              | 0.003              | 0.013              | 0.000                | 0.070                      | 0.012                         |
| ARITH. MEAN :     | 5.00                 | 2.58              | 0.088              | 0.404              | 0.230                | 0.246                      | 0.046                         |
| ARITH. STD. DEV : | 4.13                 | 1.56              | 0.046              | 0.221              | 0.180                | 0.095                      | 0.031                         |
| GEOM. MEAN :      | 3.18                 | 2.46              | 0.065              | 0.304              | 0.205                | 0.226                      | 0.038                         |
| 1ST QUARTILE :    | 2.63                 | 1.51              | 0.052              | 0.240              | 0.045                | 0.182                      | 0.023                         |
| 2ND QUARTILE :    | 3.80                 | 2.21              | 0.092              | 0.443              | 0.235                | 0.235                      | 0.045                         |
| 3RD QUARTILE :    | 6.42                 | 3.92              | 0.121              | 0.503              | 0.373                | 0.308                      | 0.058                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 1                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.293                | 0.342             | 0.367              | 0.167              | 0.023                | 0.0190                     | 0.004                         |
| MINIMUM :         | 0.044                | 0.000             | 0.003              | 0.000              | 0.000                | 0.0006                     | 0.001                         |
| ARITH. MEAN :     | 0.144                | 0.081             | 0.086              | 0.053              | 0.007                | 0.0057                     | 0.002                         |
| ARITH. STD. DEV : | 0.073                | 0.087             | 0.103              | 0.055              | 0.006                | 0.0047                     | 0.001                         |
| GEOM. MEAN :      | 0.126                | 0.058             | 0.051              | 0.045              | 0.005                | 0.0042                     | 0.002                         |
| 1ST QUARTILE :    | 0.083                | 0.023             | 0.029              | 0.003              | 0.002                | 0.0027                     | 0.002                         |
| 2ND QUARTILE :    | 0.138                | 0.069             | 0.054              | 0.056              | 0.006                | 0.0049                     | 0.002                         |
| 3RD QUARTILE :    | 0.203                | 0.108             | 0.068              | 0.072              | 0.008                | 0.0069                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00950              | 0.0016            | 0.0228             | 0.00983            | 1.3371               | 8.98                       | 0.90                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0006             | 0.00012            | 0.0000               | 0.04                       | 0.02                          |
| ARITH. MEAN :     | 0.00280              | 0.0007            | 0.0118             | 0.00322            | 0.7321               | 3.36                       | 0.49                          |
| ARITH. STD. DEV : | 0.00262              | 0.0006            | 0.0061             | 0.00355            | 0.3089               | 2.29                       | 0.25                          |
| GEOM. MEAN :      | 0.00208              | 0.0009            | 0.0091             | 0.00143            | 0.7682               | 2.22                       | 0.38                          |
| 1ST QUARTILE :    | 0.00061              | 0.0002            | 0.0088             | 0.00031            | 0.6328               | 2.11                       | 0.32                          |
| 2ND QUARTILE :    | 0.00248              | 0.0006            | 0.0115             | 0.00208            | 0.7056               | 3.08                       | 0.54                          |
| 3RD QUARTILE :    | 0.00404              | 0.0012            | 0.0161             | 0.00639            | 0.8756               | 4.14                       | 0.61                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=SMITHS FALLS LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 10.81                | 6.51              | 0.224              | 0.692              | 1.819                | 1.192                      | 0.175                         |
| MINIMUM :         | 1.55                 | 2.02              | 0.054              | 0.190              | 0.097                | 0.164                      | 0.018                         |
| ARITH. MEAN :     | 4.73                 | 3.61              | 0.103              | 0.425              | 0.751                | 0.433                      | 0.082                         |
| ARITH. STD. DEV : | 2.49                 | 1.34              | 0.049              | 0.160              | 0.517                | 0.309                      | 0.051                         |
| GEOM. MEAN :      | 4.21                 | 3.41              | 0.094              | 0.396              | 0.580                | 0.355                      | 0.067                         |
| 1ST QUARTILE :    | 3.31                 | 2.64              | 0.061              | 0.282              | 0.386                | 0.191                      | 0.041                         |
| 2ND QUARTILE :    | 4.01                 | 3.16              | 0.094              | 0.397              | 0.533                | 0.316                      | 0.070                         |
| 3RD QUARTILE :    | 5.52                 | 4.14              | 0.118              | 0.579              | 1.165                | 0.534                      | 0.115                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.723                | 0.388             | 0.241              | 0.820              | 0.014                | 0.0232                     | 0.004                         |
| MINIMUM :         | 0.094                | 0.000             | 0.025              | 0.046              | 0.000                | 0.0059                     | 0.001                         |
| ARITH. MEAN :     | 0.289                | 0.180             | 0.121              | 0.335              | 0.010                | 0.0128                     | 0.002                         |
| ARITH. STD. DEV : | 0.199                | 0.109             | 0.067              | 0.241              | 0.004                | 0.0059                     | 0.001                         |
| GEOM. MEAN :      | 0.234                | 0.173             | 0.103              | 0.260              | 0.010                | 0.0116                     | 0.002                         |
| 1ST QUARTILE :    | 0.125                | 0.107             | 0.071              | 0.167              | 0.007                | 0.0074                     | 0.001                         |
| 2ND QUARTILE :    | 0.234                | 0.142             | 0.095              | 0.252              | 0.011                | 0.0111                     | 0.002                         |
| 3RD QUARTILE :    | 0.439                | 0.270             | 0.182              | 0.490              | 0.013                | 0.0181                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00322              | 0.0027            | 0.0271             | 0.00984            | 1.0380               | 6.41                       | 0.80                          |
| MINIMUM :         | 0.00094              | 0.0005            | 0.0094             | 0.00353            | 0.4618               | 2.02                       | 0.29                          |
| ARITH. MEAN :     | 0.00162              | 0.0014            | 0.0185             | 0.00747            | 0.7141               | 3.57                       | 0.53                          |
| ARITH. STD. DEV : | 0.00071              | 0.0007            | 0.0057             | 0.00191            | 0.1732               | 1.23                       | 0.17                          |
| GEOM. MEAN :      | 0.00151              | 0.0012            | 0.0177             | 0.00719            | 0.6954               | 3.39                       | 0.50                          |
| 1ST QUARTILE :    | 0.00106              | 0.0009            | 0.0148             | 0.00609            | 0.6001               | 2.65                       | 0.37                          |
| 2ND QUARTILE :    | 0.00148              | 0.0011            | 0.0163             | 0.00825            | 0.6839               | 3.33                       | 0.48                          |
| 3RD QUARTILE :    | 0.00178              | 0.0021            | 0.0245             | 0.00876            | 0.8529               | 4.29                       | 0.71                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-TURKEY LAKES LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 5.89                 | 3.49              | 0.163              | 0.273              | 0.347                | 0.276                      | 0.082                         |
| MINIMUM :         | 0.88                 | 1.46              | 0.034              | 0.061              | 0.000                | 0.073                      | 0.009                         |
| ARITH. MEAN :     | 2.52                 | 2.02              | 0.081              | 0.150              | 0.106                | 0.174                      | 0.033                         |
| ARITH. STD. DEV : | 1.41                 | 0.56              | 0.038              | 0.063              | 0.105                | 0.062                      | 0.021                         |
| GEOM. MEAN :      | 2.19                 | 1.96              | 0.073              | 0.137              | 0.107                | 0.163                      | 0.028                         |
| 1ST QUARTILE :    | 1.32                 | 1.57              | 0.052              | 0.095              | 0.015                | 0.120                      | 0.016                         |
| 2ND QUARTILE :    | 2.26                 | 1.88              | 0.079              | 0.152              | 0.069                | 0.172                      | 0.025                         |
| 3RD QUARTILE :    | 3.39                 | 2.28              | 0.105              | 0.189              | 0.192                | 0.233                      | 0.051                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.215                | 0.140             | 0.203              | 0.284              | 0.009                | 0.0088                     | 0.009                         |
| MINIMUM :         | 0.049                | 0.000             | 0.026              | 0.000              | 0.000                | 0.0020                     | 0.001                         |
| ARITH. MEAN :     | 0.130                | 0.065             | 0.072              | 0.075              | 0.003                | 0.0043                     | 0.003                         |
| ARITH. STD. DEV : | 0.056                | 0.045             | 0.048              | 0.088              | 0.003                | 0.0020                     | 0.002                         |
| GEOM. MEAN :      | 0.118                | 0.067             | 0.061              | 0.069              | 0.003                | 0.0039                     | 0.002                         |
| 1ST QUARTILE :    | 0.075                | 0.029             | 0.033              | 0.010              | 0.000                | 0.0026                     | 0.002                         |
| 2ND QUARTILE :    | 0.141                | 0.057             | 0.068              | 0.039              | 0.003                | 0.0043                     | 0.002                         |
| 3RD QUARTILE :    | 0.181                | 0.102             | 0.096              | 0.095              | 0.005                | 0.0054                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.00514              | 0.0010            | 0.0313             | 0.01257            | 1.0230               | 3.48                       | 0.37                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0027             | 0.00000            | 0.4339               | 1.07                       | 0.12                          |
| ARITH. MEAN :     | 0.00167              | 0.0004            | 0.0092             | 0.00354            | 0.6545               | 1.93                       | 0.23                          |
| ARITH. STD. DEV : | 0.00178              | 0.0003            | 0.0076             | 0.00456            | 0.1659               | 0.70                       | 0.09                          |
| GEOM. MEAN :      | 0.00113              | 0.0005            | 0.0073             | 0.00131            | 0.6365               | 1.82                       | 0.22                          |
| 1ST QUARTILE :    | 0.00038              | 0.0000            | 0.0049             | 0.00013            | 0.5254               | 1.34                       | 0.15                          |
| 2ND QUARTILE :    | 0.00102              | 0.0004            | 0.0063             | 0.00127            | 0.6429               | 1.78                       | 0.23                          |
| 3RD QUARTILE :    | 0.00325              | 0.0004            | 0.0118             | 0.00609            | 0.7693               | 2.45                       | 0.31                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION=OXBRIDGE LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 46.20                | 41.25             | 1.699              | 4.246              | 7.886                | 4.853                      | 0.152                         |
| MINIMUM :         | 1.37                 | 0.75              | 0.006              | 0.108              | 0.000                | 0.174                      | 0.016                         |
| ARITH. MEAN :     | 8.44                 | 5.74              | 0.205              | 0.697              | 0.916                | 0.732                      | 0.052                         |
| ARITH. STD. DEV : | 12.49                | 11.25             | 0.472              | 1.131              | 2.206                | 1.308                      | 0.040                         |
| GEOM. MEAN :      | 4.74                 | 2.82              | 0.071              | 0.411              | 0.352                | 0.406                      | 0.041                         |
| 1ST QUARTILE :    | 2.47                 | 1.59              | 0.034              | 0.264              | 0.144                | 0.241                      | 0.023                         |
| 2ND QUARTILE :    | 4.10                 | 2.37              | 0.072              | 0.378              | 0.237                | 0.271                      | 0.034                         |
| 3RD QUARTILE :    | 9.61                 | 3.90              | 0.120              | 0.608              | 0.473                | 0.604                      | 0.079                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 2.275                | 2.062             | 1.092              | 0.789              | 0.249                | 0.0849                     | 0.042                         |
| MINIMUM :         | 0.073                | 0.017             | 0.014              | 0.000              | 0.000                | 0.0021                     | 0.001                         |
| ARITH. MEAN :     | 0.378                | 0.252             | 0.155              | 0.104              | 0.029                | 0.0127                     | 0.006                         |
| ARITH. STD. DEV : | 0.609                | 0.574             | 0.301              | 0.223              | 0.073                | 0.0231                     | 0.012                         |
| GEOM. MEAN :      | 0.211                | 0.092             | 0.069              | 0.064              | 0.010                | 0.0065                     | 0.003                         |
| 1ST QUARTILE :    | 0.098                | 0.052             | 0.037              | 0.000              | 0.003                | 0.0033                     | 0.001                         |
| 2ND QUARTILE :    | 0.195                | 0.066             | 0.060              | 0.024              | 0.007                | 0.0048                     | 0.003                         |
| 3RD QUARTILE :    | 0.358                | 0.136             | 0.091              | 0.121              | 0.013                | 0.0097                     | 0.005                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 2                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.01213              | 0.0061            | 0.2396             | 0.01464            | 12.4355              | 36.85                      | 5.94                          |
| MINIMUM :         | 0.00000              | 0.0001            | 0.0057             | 0.00025            | 0.1902               | 1.06                       | 0.18                          |
| ARITH. MEAN :     | 0.00316              | 0.0012            | 0.0383             | 0.00562            | 1.6583               | 6.13                       | 0.90                          |
| ARITH. STD. DEV : | 0.00328              | 0.0016            | 0.0641             | 0.00541            | 3.4028               | 9.90                       | 1.60                          |
| GEOM. MEAN :      | 0.00298              | 0.0008            | 0.0219             | 0.00234            | 0.7937               | 3.45                       | 0.51                          |
| 1ST QUARTILE :    | 0.00124              | 0.0006            | 0.0115             | 0.00030            | 0.5621               | 1.66                       | 0.29                          |
| 2ND QUARTILE :    | 0.00232              | 0.0009            | 0.0200             | 0.00576            | 0.7423               | 2.97                       | 0.47                          |
| 3RD QUARTILE :    | 0.00433              | 0.0012            | 0.0314             | 0.00919            | 0.8740               | 5.79                       | 0.64                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION  
 STATION-WILKESPORT LOVOL SITE NO.1

|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 20.94                | 9.00              | 0.225              | 1.151              | 1.433                | 0.741                      | 0.105                         |
| MINIMUM :         | 6.72                 | 0.59              | 0.042              | 0.222              | 0.000                | 0.282                      | 0.000                         |
| ARITH. MEAN :     | 11.37                | 3.15              | 0.118              | 0.665              | 0.454                | 0.538                      | 0.046                         |
| ARITH. STD. DEV : | 3.86                 | 2.47              | 0.053              | 0.297              | 0.436                | 0.136                      | 0.031                         |
| GEOM. MEAN :      | 10.84                | 2.25              | 0.107              | 0.595              | 0.339                | 0.520                      | 0.049                         |
| 1ST QUARTILE :    | 8.36                 | 0.82              | 0.078              | 0.438              | 0.047                | 0.435                      | 0.023                         |
| 2ND QUARTILE :    | 10.76                | 3.02              | 0.108              | 0.630              | 0.502                | 0.585                      | 0.052                         |
| 3RD QUARTILE :    | 13.56                | 4.60              | 0.162              | 0.910              | 0.662                | 0.646                      | 0.064                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0                          | 0                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13                         | 13                            |
| MAXIMUM :         | 0.220                | 0.354             | 0.322              | 0.531              | 0.046                | 0.0156                     | 0.004                         |
| MINIMUM :         | 0.070                | 0.013             | 0.000              | 0.000              | 0.000                | 0.0000                     | 0.000                         |
| ARITH. MEAN :     | 0.162                | 0.129             | 0.107              | 0.117              | 0.010                | 0.0068                     | 0.003                         |
| ARITH. STD. DEV : | 0.040                | 0.096             | 0.110              | 0.172              | 0.013                | 0.0051                     | 0.001                         |
| GEOM. MEAN :      | 0.156                | 0.091             | 0.066              | 0.060              | 0.005                | 0.0053                     | 0.003                         |
| 1ST QUARTILE :    | 0.143                | 0.038             | 0.017              | 0.018              | 0.001                | 0.0012                     | 0.002                         |
| 2ND QUARTILE :    | 0.165                | 0.149             | 0.076              | 0.058              | 0.005                | 0.0074                     | 0.003                         |
| 3RD QUARTILE :    | 0.189                | 0.180             | 0.165              | 0.107              | 0.014                | 0.0107                     | 0.003                         |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 1                    | 0                          | 0                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 13                   | 13                | 13                 | 13                 | 13                   | 13.00                      | 13.00                         |
| MAXIMUM :         | 0.09583              | 0.0057            | 0.0447             | 0.01269            | 1.9313               | 11.04                      | 1.30                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0006             | 0.00000            | 0.5781               | 3.56                       | 0.26                          |
| ARITH. MEAN :     | 0.00981              | 0.0018            | 0.0231             | 0.00382            | 1.0047               | 6.73                       | 0.78                          |
| ARITH. STD. DEV : | 0.02591              | 0.0019            | 0.0145             | 0.00468            | 0.3767               | 2.18                       | 0.31                          |
| GEOM. MEAN :      | 0.00316              | 0.0015            | 0.0156             | 0.00175            | 0.9471               | 6.40                       | 0.72                          |
| 1ST QUARTILE :    | 0.00114              | 0.0001            | 0.0080             | 0.00039            | 0.7038               | 4.74                       | 0.52                          |
| 2ND QUARTILE :    | 0.00258              | 0.0012            | 0.0254             | 0.00123            | 1.0074               | 7.04                       | 0.78                          |
| 3RD QUARTILE :    | 0.00515              | 0.0030            | 0.0345             | 0.00815            | 1.2376               | 8.19                       | 1.01                          |
| MISSING VALUES :  | 0                    | 0                 | 0                  | 0                  | 0                    | 0.00                       | 0.00                          |

**PART IV**

**SUMMARY STATISTICS OF OBSERVED CONCENTRATION BY REGION**



ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

| REGION=CE         |                      |                   |                    |                    |                      |                            |                               |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
| # OF SAMPLES :    | 35                   | 35                | 35                 | 35                 | 35                   | 35                         | 35                            |
| MAXIMUM :         | 46.20                | 41.25             | 1.699              | 4.246              | 7.886                | 4.853                      | 0.152                         |
| MINIMUM :         | 0.00                 | 0.24              | 0.006              | 0.013              | 0.000                | 0.000                      | 0.000                         |
| ARITH. MEAN :     | 6.16                 | 3.91              | 0.166              | 0.447              | 0.499                | 0.417                      | 0.048                         |
| ARITH. STD. DEV : | 7.88                 | 6.83              | 0.285              | 0.720              | 1.345                | 0.823                      | 0.032                         |
| GEOM. MEAN :      | 4.51                 | 2.59              | 0.100              | 0.228              | 0.253                | 0.321                      | 0.044                         |
| 1ST QUARTILE :    | 2.45                 | 2.11              | 0.066              | 0.163              | 0.101                | 0.165                      | 0.026                         |
| 2ND QUARTILE :    | 4.13                 | 2.64              | 0.100              | 0.270              | 0.230                | 0.258                      | 0.040                         |
| 3RD QUARTILE :    | 7.93                 | 3.26              | 0.175              | 0.589              | 0.452                | 0.444                      | 0.060                         |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 2                    | 2                          | 2                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 35                   | 35                | 35                 | 35                 | 35                   | 35                         | 35                            |
| MAXIMUM :         | 2.275                | 2.062             | 1.092              | 0.789              | 0.249                | 0.0849                     | 0.042                         |
| MINIMUM :         | 0.000                | 0.000             | 0.000              | 0.000              | 0.000                | 0.0001                     | 0.000                         |
| ARITH. MEAN :     | 0.234                | 0.139             | 0.103              | 0.077              | 0.015                | 0.0077                     | 0.004                         |
| ARITH. STD. DEV : | 0.383                | 0.353             | 0.193              | 0.149              | 0.046                | 0.0143                     | 0.007                         |
| GEOM. MEAN :      | 0.151                | 0.080             | 0.058              | 0.049              | 0.006                | 0.0046                     | 0.002                         |
| 1ST QUARTILE :    | 0.085                | 0.036             | 0.037              | 0.000              | 0.003                | 0.0029                     | 0.002                         |
| 2ND QUARTILE :    | 0.132                | 0.060             | 0.048              | 0.027              | 0.006                | 0.0047                     | 0.002                         |
| 3RD QUARTILE :    | 0.288                | 0.117             | 0.070              | 0.074              | 0.011                | 0.0075                     | 0.003                         |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 7                    | 2                          | 2                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 35                   | 35                | 35                 | 35                 | 35                   | 35.00                      | 35.00                         |
| MAXIMUM :         | 0.01213              | 0.0061            | 0.2396             | 0.01464            | 12.4355              | 36.85                      | 5.94                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0010             | 0.00000            | 0.1902               | 0.08                       | 0.06                          |
| ARITH. MEAN :     | 0.00230              | 0.0010            | 0.0236             | 0.00503            | 1.0772               | 4.38                       | 0.61                          |
| ARITH. STD. DEV : | 0.00248              | 0.0011            | 0.0399             | 0.00487            | 2.0576               | 6.10                       | 0.98                          |
| GEOM. MEAN :      | 0.00189              | 0.0008            | 0.0152             | 0.00207            | 0.7297               | 2.98                       | 0.42                          |
| 1ST QUARTILE :    | 0.00075              | 0.0005            | 0.0099             | 0.00031            | 0.5571               | 2.09                       | 0.26                          |
| 2ND QUARTILE :    | 0.00175              | 0.0008            | 0.0147             | 0.00373            | 0.7443               | 3.11                       | 0.40                          |
| 3RD QUARTILE :    | 0.00262              | 0.0011            | 0.0240             | 0.00915            | 0.8577               | 4.76                       | 0.67                          |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 2                    | 2.00                       | 2.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

| REGION=NE         |                      |                   |                    |                    |                      |                            |                               |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
|                   | SULFUR DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
| # OF SAMPLES :    | 88                   | 88                | 88                 | 88                 | 88                   | 88                         | 88                            |
| MAXIMUM :         | 13.49                | 5.19              | 0.213              | 0.413              | 2.013                | 0.639                      | 0.087                         |
| MINIMUM :         | 0.22                 | 0.19              | 0.000              | 0.000              | 0.000                | 0.073                      | 0.004                         |
| ARITH. MEAN :     | 3.85                 | 2.06              | 0.072              | 0.146              | 0.144                | 0.236                      | 0.033                         |
| ARITH. STD. DEV : | 3.15                 | 0.93              | 0.049              | 0.096              | 0.244                | 0.115                      | 0.018                         |
| GEOM. MEAN :      | 2.67                 | 1.84              | 0.055              | 0.114              | 0.110                | 0.212                      | 0.028                         |
| 1ST QUARTILE :    | 1.48                 | 1.46              | 0.030              | 0.068              | 0.027                | 0.148                      | 0.021                         |
| 2ND QUARTILE :    | 2.80                 | 1.95              | 0.066              | 0.121              | 0.074                | 0.206                      | 0.029                         |
| 3RD QUARTILE :    | 5.79                 | 2.56              | 0.106              | 0.219              | 0.164                | 0.288                      | 0.049                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 88                   | 88                | 88                 | 88                 | 88                   | 88                         | 88                            |
| MAXIMUM :         | 0.868                | 1.450             | 0.645              | 0.501              | 0.062                | 0.0247                     | 0.024                         |
| MINIMUM :         | 0.039                | 0.000             | 0.007              | 0.000              | 0.000                | 0.0000                     | 0.001                         |
| ARITH. MEAN :     | 0.169                | 0.112             | 0.106              | 0.092              | 0.005                | 0.0047                     | 0.003                         |
| ARITH. STD. DEV : | 0.109                | 0.189             | 0.129              | 0.122              | 0.008                | 0.0041                     | 0.003                         |
| GEOM. MEAN :      | 0.145                | 0.078             | 0.063              | 0.069              | 0.004                | 0.0037                     | 0.003                         |
| 1ST QUARTILE :    | 0.091                | 0.029             | 0.030              | 0.018              | 0.001                | 0.0023                     | 0.002                         |
| 2ND QUARTILE :    | 0.149                | 0.059             | 0.058              | 0.042              | 0.004                | 0.0035                     | 0.003                         |
| 3RD QUARTILE :    | 0.214                | 0.126             | 0.126              | 0.098              | 0.008                | 0.0054                     | 0.004                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 8                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 88                   | 88                | 88                 | 88                 | 88                   | 88.00                      | 88.00                         |
| MAXIMUM :         | 0.00908              | 0.0029            | 0.0335             | 0.02098            | 2.1272               | 7.71                       | 0.59                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00000            | 0.0926               | 0.25                       | 0.02                          |
| ARITH. MEAN :     | 0.00199              | 0.0005            | 0.0099             | 0.00361            | 0.6259               | 2.61                       | 0.22                          |
| ARITH. STD. DEV : | 0.00187              | 0.0005            | 0.0065             | 0.00498            | 0.3009               | 1.70                       | 0.14                          |
| GEOM. MEAN :      | 0.00151              | 0.0005            | 0.0082             | 0.00131            | 0.5611               | 2.07                       | 0.17                          |
| 1ST QUARTILE :    | 0.00061              | 0.0001            | 0.0057             | 0.00027            | 0.4603               | 1.32                       | 0.10                          |
| 2ND QUARTILE :    | 0.00131              | 0.0004            | 0.0093             | 0.00108            | 0.5858               | 2.31                       | 0.20                          |
| 3RD QUARTILE :    | 0.00340              | 0.0008            | 0.0125             | 0.00544            | 0.7978               | 3.48                       | 0.30                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

| REGION-NW         |                      |                   |                    |                    |                      |                            |                               |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
| # OF SAMPLES :    | 61                   | 61                | 61                 | 61                 | 61                   | 61                         | 61                            |
| MAXIMUM :         | 2.56                 | 2.71              | 0.230              | 1.020              | 0.875                | 0.418                      | 0.182                         |
| MINIMUM :         | 0.00                 | 0.04              | 0.000              | 0.000              | 0.000                | 0.081                      | 0.000                         |
| ARITH. MEAN :     | 0.89                 | 0.97              | 0.039              | 0.110              | 0.152                | 0.180                      | 0.025                         |
| ARITH. STD. DEV : | 0.57                 | 0.47              | 0.035              | 0.177              | 0.193                | 0.078                      | 0.028                         |
| GEOM. MEAN :      | 0.77                 | 0.82              | 0.031              | 0.070              | 0.111                | 0.165                      | 0.020                         |
| 1ST QUARTILE :    | 0.44                 | 0.65              | 0.020              | 0.039              | 0.024                | 0.122                      | 0.012                         |
| 2ND QUARTILE :    | 0.71                 | 0.97              | 0.030              | 0.068              | 0.071                | 0.166                      | 0.018                         |
| 3RD QUARTILE :    | 1.36                 | 1.31              | 0.045              | 0.105              | 0.216                | 0.212                      | 0.030                         |
| MISSING VALUES :  | 3                    | 2                 | 1                  | 0                  | 2                    | 3                          | 2                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 61                   | 61                | 61                 | 61                 | 61                   | 61                         | 61                            |
| MAXIMUM :         | 0.391                | 0.528             | 0.600              | 0.661              | 0.011                | 0.0153                     | 0.018                         |
| MINIMUM :         | 0.051                | 0.000             | 0.000              | 0.000              | 0.000                | 0.0000                     | 0.000                         |
| ARITH. MEAN :     | 0.147                | 0.074             | 0.085              | 0.060              | 0.003                | 0.0029                     | 0.002                         |
| ARITH. STD. DEV : | 0.070                | 0.096             | 0.121              | 0.108              | 0.003                | 0.0026                     | 0.004                         |
| GEOM. MEAN :      | 0.133                | 0.050             | 0.044              | 0.039              | 0.002                | 0.0024                     | 0.002                         |
| 1ST QUARTILE :    | 0.094                | 0.022             | 0.016              | 0.005              | 0.001                | 0.0012                     | 0.001                         |
| 2ND QUARTILE :    | 0.131                | 0.039             | 0.039              | 0.025              | 0.002                | 0.0022                     | 0.001                         |
| 3RD QUARTILE :    | 0.178                | 0.086             | 0.094              | 0.058              | 0.004                | 0.0037                     | 0.003                         |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 7                    | 2                          | 2                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 61                   | 61                | 61                 | 61                 | 61                   | 61.00                      | 61.00                         |
| MAXIMUM :         | 0.02580              | 0.0026            | 0.0646             | 0.02396            | 1.2818               | 1.45                       | 1.09                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0000             | 0.00011            | 0.0000               | 0.12                       | 0.02                          |
| ARITH. MEAN :     | 0.00320              | 0.0005            | 0.0058             | 0.00571            | 0.4183               | 0.77                       | 0.15                          |
| ARITH. STD. DEV : | 0.00401              | 0.0005            | 0.0096             | 0.00572            | 0.2701               | 0.34                       | 0.20                          |
| GEOM. MEAN :      | 0.00222              | 0.0005            | 0.0040             | 0.00233            | 0.3671               | 0.68                       | 0.10                          |
| 1ST QUARTILE :    | 0.00056              | 0.0002            | 0.0009             | 0.00044            | 0.2523               | 0.50                       | 0.06                          |
| 2ND QUARTILE :    | 0.00209              | 0.0003            | 0.0038             | 0.00399            | 0.3506               | 0.75                       | 0.10                          |
| 3RD QUARTILE :    | 0.00470              | 0.0009            | 0.0065             | 0.00900            | 0.5029               | 1.04                       | 0.16                          |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 3                    | 3.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

| REGION=SE         |                      |                   |                    |                    |                      |                            |                               |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
| # OF SAMPLES :    | 42                   | 42                | 42                 | 42                 | 42                   | 42                         | 42                            |
| MAXIMUM :         | 19.63                | 13.73             | 0.393              | 1.636              | 7.935                | 7.853                      | 3.599                         |
| MINIMUM :         | 1.24                 | 0.28              | 0.052              | 0.029              | 0.000                | 0.164                      | 0.018                         |
| ARITH. MEAN :     | 5.58                 | 4.33              | 0.118              | 0.431              | 0.733                | 0.622                      | 0.325                         |
| ARITH. STD. DEV : | 3.84                 | 2.44              | 0.066              | 0.282              | 1.267                | 1.193                      | 0.810                         |
| GEOM. MEAN :      | 4.65                 | 3.73              | 0.105              | 0.353              | 0.434                | 0.403                      | 0.109                         |
| 1ST QUARTILE :    | 3.05                 | 2.89              | 0.079              | 0.255              | 0.185                | 0.269                      | 0.060                         |
| 2ND QUARTILE :    | 4.44                 | 3.58              | 0.099              | 0.382              | 0.363                | 0.338                      | 0.092                         |
| 3RD QUARTILE :    | 6.81                 | 5.31              | 0.150              | 0.579              | 0.858                | 0.512                      | 0.133                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 4                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 42                   | 42                | 42                 | 42                 | 42                   | 42                         | 42                            |
| MAXIMUM :         | 5.726                | 1.111             | 1.032              | 0.820              | 0.044                | 0.0656                     | 0.009                         |
| MINIMUM :         | 0.094                | 0.000             | 0.020              | 0.000              | 0.000                | 0.0042                     | 0.000                         |
| ARITH. MEAN :     | 0.482                | 0.161             | 0.127              | 0.214              | 0.009                | 0.0144                     | 0.003                         |
| ARITH. STD. DEV : | 0.999                | 0.175             | 0.161              | 0.197              | 0.007                | 0.0133                     | 0.002                         |
| GEOM. MEAN :      | 0.257                | 0.130             | 0.090              | 0.160              | 0.008                | 0.0109                     | 0.003                         |
| 1ST QUARTILE :    | 0.128                | 0.073             | 0.054              | 0.066              | 0.005                | 0.0059                     | 0.002                         |
| 2ND QUARTILE :    | 0.238                | 0.120             | 0.087              | 0.171              | 0.008                | 0.0092                     | 0.003                         |
| 3RD QUARTILE :    | 0.388                | 0.198             | 0.154              | 0.259              | 0.012                | 0.0156                     | 0.004                         |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1                          | 1                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 42                   | 42                | 42                 | 42                 | 42                   | 42.00                      | 42.00                         |
| MAXIMUM :         | 0.02681              | 0.0071            | 0.0720             | 0.85079            | 13.7435              | 12.43                      | 2.03                          |
| MINIMUM :         | 0.00094              | 0.0000            | 0.0088             | 0.00060            | 0.0579               | 1.65                       | 0.08                          |
| ARITH. MEAN :     | 0.00328              | 0.0016            | 0.0234             | 0.02850            | 1.2158               | 4.23                       | 0.55                          |
| ARITH. STD. DEV : | 0.00550              | 0.0013            | 0.0129             | 0.13179            | 2.1198               | 2.10                       | 0.32                          |
| GEOM. MEAN :      | 0.00206              | 0.0013            | 0.0209             | 0.00727            | 0.8241               | 3.86                       | 0.48                          |
| 1ST QUARTILE :    | 0.00130              | 0.0008            | 0.0153             | 0.00477            | 0.6095               | 3.01                       | 0.35                          |
| 2ND QUARTILE :    | 0.00160              | 0.0012            | 0.0217             | 0.00717            | 0.7900               | 3.70                       | 0.48                          |
| 3RD QUARTILE :    | 0.00301              | 0.0018            | 0.0272             | 0.00922            | 0.9594               | 4.48                       | 0.71                          |
| MISSING VALUES :  | 1                    | 1                 | 1                  | 1                  | 1                    | 1.00                       | 1.00                          |

ONTARIO MINISTRY OF THE ENVIRONMENT  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 SUMMARY STATISTICS OF CONCENTRATION

| REGION-SW         |                      |                   |                    |                    |                      |                            |                               |
|-------------------|----------------------|-------------------|--------------------|--------------------|----------------------|----------------------------|-------------------------------|
|                   | SULFUR.DIOX<br>UG/M3 | SULFATE<br>UG/M3  | NITRIC<br>UG/M3    | NITRATE<br>UG/M3   | CALCIUM<br>UG/M3     | CHLORIDE<br>UG/M3          | POTASSIUM<br>UG/M3            |
| # OF SAMPLES :    | 65                   | 65                | 65                 | 65                 | 65                   | 65                         | 65                            |
| MAXIMUM :         | 20.94                | 11.71             | 0.421              | 1.473              | 5.849                | 1.038                      | 0.143                         |
| MINIMUM :         | 0.07                 | 0.00              | 0.000              | 0.013              | 0.000                | 0.070                      | 0.000                         |
| ARITH. MEAN :     | 8.44                 | 3.72              | 0.136              | 0.703              | 0.712                | 0.463                      | 0.051                         |
| ARITH. STD. DEV : | 4.66                 | 2.50              | 0.075              | 0.332              | 1.092                | 0.200                      | 0.035                         |
| GEOM. MEAN :      | 6.49                 | 2.82              | 0.115              | 0.588              | 0.398                | 0.414                      | 0.041                         |
| 1ST QUARTILE :    | 4.36                 | 1.96              | 0.087              | 0.473              | 0.167                | 0.311                      | 0.023                         |
| 2ND QUARTILE :    | 8.09                 | 3.45              | 0.122              | 0.719              | 0.364                | 0.447                      | 0.050                         |
| 3RD QUARTILE :    | 11.93                | 4.90              | 0.183              | 0.934              | 0.648                | 0.613                      | 0.072                         |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 2                    | 3                          | 2                             |
|                   | SODIUM<br>UG/M3      | IRON<br>UG/M3     | ALUMINIUM<br>UG/M3 | MAGNESIUM<br>UG/M3 | LEAD<br>UG/M3        | MANGANESE<br>UG/M3         | COPPER<br>UG/M3               |
| # OF SAMPLES :    | 65                   | 65                | 65                 | 65                 | 65                   | 65                         | 65                            |
| MAXIMUM :         | 0.328                | 2.360             | 1.030              | 1.138              | 0.046                | 0.0369                     | 0.013                         |
| MINIMUM :         | 0.044                | 0.000             | 0.000              | 0.000              | 0.000                | 0.0000                     | 0.000                         |
| ARITH. MEAN :     | 0.156                | 0.203             | 0.142              | 0.153              | 0.010                | 0.0094                     | 0.003                         |
| ARITH. STD. DEV : | 0.063                | 0.337             | 0.161              | 0.222              | 0.010                | 0.0075                     | 0.002                         |
| GEOM. MEAN :      | 0.144                | 0.115             | 0.086              | 0.085              | 0.007                | 0.0067                     | 0.003                         |
| 1ST QUARTILE :    | 0.111                | 0.065             | 0.045              | 0.027              | 0.003                | 0.0041                     | 0.002                         |
| 2ND QUARTILE :    | 0.150                | 0.123             | 0.094              | 0.070              | 0.006                | 0.0074                     | 0.003                         |
| 3RD QUARTILE :    | 0.188                | 0.197             | 0.212              | 0.167              | 0.015                | 0.0136                     | 0.004                         |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 7                    | 2                          | 2                             |
|                   | NICKEL<br>UG/M3      | VANADIUM<br>UG/M3 | ZINC<br>UG/M3      | CADMIUM<br>UG/M3   | SULFATE NYL<br>UG/M3 | TOTAL<br>SULFUR<br>UG/M**3 | TOTAL N<br>NITRATE<br>UG/M**3 |
| # OF SAMPLES :    | 65                   | 65                | 65                 | 65                 | 65                   | 65.00                      | 65.00                         |
| MAXIMUM :         | 0.09583              | 0.0075            | 0.0877             | 0.02136            | 1.9313               | 11.04                      | 1.62                          |
| MINIMUM :         | 0.00000              | 0.0000            | 0.0006             | 0.00000            | 0.0000               | 0.04                       | 0.02                          |
| ARITH. MEAN :     | 0.00418              | 0.0016            | 0.0267             | 0.00456            | 0.9449               | 5.46                       | 0.84                          |
| ARITH. STD. DEV : | 0.01192              | 0.0017            | 0.0190             | 0.00524            | 0.4035               | 2.54                       | 0.36                          |
| GEOM. MEAN :      | 0.00221              | 0.0013            | 0.0187             | 0.00199            | 0.8820               | 4.38                       | 0.72                          |
| 1ST QUARTILE :    | 0.00129              | 0.0007            | 0.0136             | 0.00058            | 0.6675               | 3.31                       | 0.60                          |
| 2ND QUARTILE :    | 0.00202              | 0.0013            | 0.0228             | 0.00208            | 0.8552               | 5.40                       | 0.85                          |
| 3RD QUARTILE :    | 0.00407              | 0.0018            | 0.0350             | 0.00814            | 1.1088               | 7.66                       | 1.12                          |
| MISSING VALUES :  | 2                    | 2                 | 2                  | 2                  | 2                    | 2.00                       | 2.00                          |

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